AMERICAN CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

with Bell & Howell Supplement

this issue

Why Wheels Turn Backward
Cinema Whaling in the Arctic
Birth of the News Reel
. . . and other features

for the amateur

Self Photography with 16mm
Preparing a Scenario
Mysteries of Trick Photography
. . . and other features

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What to Read

Next Month

- J. A. Dubray, A. S. C., will tell about lenses required for photographing with Infra Red Plates.
- Fred Jackman, A. S. C., will tell of the advisability of The Cinematographer taking out patents.
- The Department Photography of the Month will return to our columns after an absence of several issues.
- We will have an article from a new angle on Miniature Photography.
- And there will be other interesting features.

The Staff

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At right Theodore A. Woolsey is shown with a disk with 4 spokes he built for making his tests. He used similar disks with lines representing as high as 12 spokes.

Why Wheels

LET us bear in mind first that a motion picture is composed of a series of still pictures taken and projected at a speed that deceives the eye. All sound motion pictures are taken and projected at a speed of 24 frames or exposures per second. Pictures may be taken at any speed from 8 to 64 exposures per second with the average camera, and the sound may be "dubbed" in afterward; but it must be put on the sound track at the rate of 24 exposures per second, which is the universal projection speed for all theaters. A variation in this speed in either photographing or projecting will throw the sound out and will keep it from being a natural reproduction. There are just the two variables in the synchronization—one the camera shutter speed and the other the speed of rotation of the object. If the picture must be taken at 24 frames per second, the speed of rotation of the object must be varied, but this is sometimes very inconvenient or impossible. This extreme case is very seldom met with, for in nearly all pictures where there is a possibility of this phenomena existing the sound is "dubbed" in and consequently the actual photography may be made at the proper speed, which makes the camera the desired variable.

The photographing of objects rotating at a constant rate is much more simple than if acceleration occurs, and this will be discussed first.

If a wheel with one spoke, as in Figure 1-a, rotates at the rate of one revolution to every exposure taken, the wheel will appear to remain stationary. If the spoke rotates ⅛ revolutions to each exposure the wheel will appear to rotate clockwise—the spoke first appearing at A, then at B (on the second exposure) and so on, at C, D, E, F, G and H; and then back to A. If the wheel makes 1⅛, 2⅛, 3⅛, and so on, revolutions per exposure, the projection will show the wheel turning at the same rate of speed as if it were actually turning only ⅛ of a revolution per exposure. The slower the wheel is turning, with respect to the camera speed, the more clear the detail of the spoke will be; whereas the faster the rotation of the wheel, the more blurred the spoke will appear.

With a camera that has a shutter opening of 216° taking pictures at the rate of 24 exposures per second, it follows mathematically that:

(216-360) X (1-24) = 0.25 sec. = 1-40 sec. or 1-40 second is the time allowed for the impression of the object to be made on the film. If the speed of rotation of the wheel is ⅛ of that of the number of exposures taken per second, it follows then that the blur of the spoke will scribe an arc of:

(⅛) X .025 X 24 X 360 = 27° (see Fig. 1-b).

The faster the rotation of the wheel the greater this arc of blur will be. Thus, if the wheel is turning 1⅛ times the number of exposures per second, it will be turning:

1.125 X 24 X 60 = 1620 r.p.m., and the blur angle will be:

1.125 X .025 X 24 X 360 = 243° (see Fig. 1-c).

When cruising, the speed of the average airplane propeller, which may be likened to a two spoke wheel, is from 1620 to 1700 r.p.m. In order to keep the blur angle to a minimum and not overlapping when photographing it, the shutter opening should be reduced to about one-third or 72°, which would reduce the blur angle to:

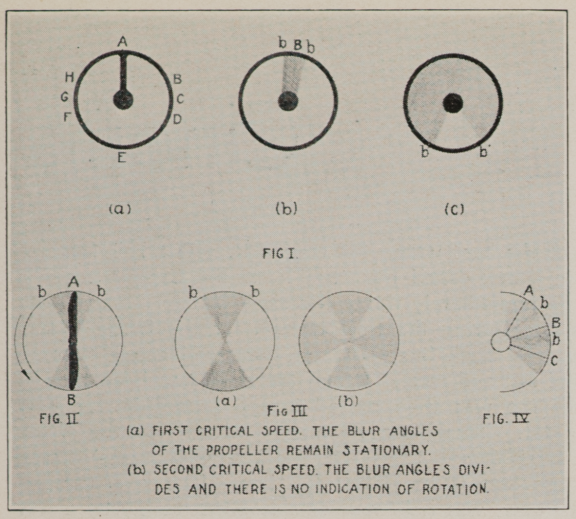
(72-360) X (1-24) X 1.125 X 24 X 360 = 81°.

In order to make the propeller appear to be rotating in the correct direction, the consecutive pictures must be taken with the blur angle leading in the correct direction. This is a problem of synchronizing the camera with the propeller in such a manner that the cameraman may detect, while taking the picture, the direction of rotation of the blur angle and control its speed and direction of rotation by regulating the camera speed.

The detector which allows the cameraman to accomplish this is made of an auxiliary view finder placed behind either the photographic shutter, or an auxiliary shutter of the same angle of opening, and rotating at the same speed as the photographic shutter. When the picture is being taken the image is projected into the eye and is behaving identically in the same manner as when it is projected onto the screen.

In the taking of close-ups of airplanes the cameraman may watch the scene through the detector, and if the propeller is not behaving according to his desires he may either signal for the pilot to speed the engine up or slow it down a bit, or merely regulate his camera speed control to make the blur angle rotate in the correct direction and "dubb" the sound in later.

In the event that the blur angle appears to stand still and not rotate in the auxiliary view finder the speed of rotation of the propeller and the number of exposures taken per second are in unison—that is the propeller may rotate ½, 1, 1½, 2½, etc. revolutions per exposure. In the case of one revolution per exposure, A, in Fig. 2, would make one



Turn Backwards

by

Theodore A. Woolsey

complete revolution, and the blur angle would stand stil upon projection. The propeler, if speeded up or if the camera was slowed down, would appear to rotate in the correct direction, and on the other hand if the propeller was slowed down or the camera was speeded up, the blur angle would rotate in the wrong direction.

Upon actual test of a spoked disc on an automobile wheel it was found that the blur angle could be made to stand still, reverse or rotate in the correct direction with varying speeds, at the will of the cameraman, by watching through the eye piece and controlling the speed of the camera. From the first critical speed, when the blur angle remained stationary, the camera was slowed down gradually until the blur angle began to rotate with increasing velocity and finally break up. A second critical speed was then reached where the propeller blades in each exposure were at right angles to those in the preceding exposure, thus showing four blur angles with no rotation, instead of two.

The camera was slowed down below this speed and the four blur angles gradually merged into two and the direction of rotation reversed.

The experiment was repeated with the camera being speeded up instead of being slowed down, from the first critical speed. The blur angle commenced to reverse in direction of rotation with increased velocity, until a high critical speed was reached, where the blur angles split into four again and no rotation could be detected. Upon increasing the camera speed still more the blur angles merged gradually into two and rotated in the correct direction.

In the experiment it was noticed that the blur angle increased in size with slower camera speeds and decreased in size with increased camera speeds. This is due to the increase and decrease in the speed of rotation of the propeller blades, with respect to the length of time of the exposure.

To make a study of wheels with a larger number of spokes, automobile wheels, various gear wheels and belt pulleys were used. The three, four, five, six, etc. spoke wheels act precisely in the same manner as the one and two spoke wheels—the only difference being that the greater the number of spokes the greater the number of critical speeds.

There were two important things that were evidenced in the photographing of wheels with several spokes turning at high rates of speed. First, the shutter opening must be sufficiently small to keep the blur angle sufficiently small in order that it will be smaller than the angle between the spokes. If the blur angle is not less than the angle between the spokes, the wheel will appear to be a disc. The second item of importance is that the camera speed becomes more sensitive when the number of spokes are increased and this requires a more delicate adjustment of the camera speed control.

Before taking any picture of rotating objects the cameraman should be able to figure mathematically, in only a few minutes, the necessary camera speed and angle of shutter opening to produce a picture that illustrates as near as possible what actually transpired. The mathematics involved is simple, as is shown in the preceding paragraphs.

In the event that acceleration occurs the camera must be speeded up with the accelerating object. By adjusting the camera speed control it was found during the experiments that it was possible to stay between two critical speeds and keep the blur angles rotating correctly. Upon projection of accelerating objects taken when the camera is speeded up, the picture will lack the acceleration that actually was present. This may or may not be desired. If the camera takes pictures at a constant speed, of a wheel that accelerates, the blur angles will gradually decrease in size and will rotate with increasing velocity from one critical speed in one direction; and break up into twice the number of angles as there are spokes at another critical speed, where it then stops rotating. The wheel then appears to reverse in direction of rotation and the spokes merge into the original number again and gradually stop rotating at the next critical speed.

Accelerating objects seldom give trouble in motion picture photography unless spoked wheels or propellers are attached. Automobiles and airplanes are the two outstanding examples where this phenomena occurs. If the acceleration is not too great the camera can follow nicely and keep the chauffeur or pilot from appearing to shift in reverse and pick up more speed.

This idea of watching the scene through an auxiliary view finder and shutter was not conceived by an inventor. I just had an idea that "clicked."

Let us hope that in the future wheels and propellers in the movies are kept rotating in the right direction.

Cinema

Len Smith, A. S. C. snapped on board the "Nanuk."

IN NOME our first novel experience was the absence of any darkness at night. The day was truly twenty-four hours long and it was quite confusing to retire in broad daylight. And there was enough daylight in which to photograph at any time during the night, though, of course, the results would hardly be satisfactory, for the quality of this peculiarly flat light was extremely poor. There, at Nome, we waited until the last day of June for our schooner the "Nanuk," which, through the long winter and up to now had been locked in the ice at Teller, eighty miles to the North. Four of these days of waiting were occupied in photographing some scenes of a great herd of raindeer which were stampeded back and forth across a lagoon down at a place called Golovin. We flew to and from the location though it was only forty miles away for the one road leading to that place was almost impossible to travel.

Then Capt. Davis Lane brought the "Nanuk" down to Nome and, on the first day of July we set forth in our search for whales.

A few days later, East Cape on the coast of Siberia came into sight. It was a mountainous, forbidding-looking coast-line and it was here that Capt. Lane told us, were the whaling grounds. And a short distance further North were ice banks that were also needed in our work. He was not mistaken. Soon we sighted our whales—the long, swift, California Greys, the most difficult of all to capture.

Dick Rosson, the director, lost no time in getting the company started in its initial hunt. The two whale boats were lowered. Capt. Lane, and the gunner in command of one, and an old whaling mate of his, Henry Gonzales, in the other. Two white men, in addition, in each of the boats and the remainder of the crew made up of Eskimos hired in Nome. These whaling boats were 25 feet long. Capt. Lane's boat was equipped with what is known to whalers as a Jap Gun, into which was inserted an iron or harpoon, to which was attached the line. This line or part of it, about 20 fathoms, lay coiled in the bow of the boat and then continued on to the stern, where it was coiled around a snubbing post and then forward again to the middle of the boat where the rest of it, about 150 fathoms rested in a box called the "tub". If the Captain made a strike, he immediately threw the slack coil in the bow into the water. During the time it took for the whale to run and pull this slack line taut, the crew had ample time to lower the sail and mast. When the slack had been thrown out, the line was then placed into a groove in the bow of the boat. Thereafter, no matter which way the whale turned in its efforts to escape, the bow was always turned in his direction as he pulled the line. The line, running from the bow, was held taut or slackened merely by a few turns of it around the snubbing post in the stern, and if the whale ran before us too swiftly, thus forcing the bow down into the water, these turns were slackened around the post and more line played out of the tub. More than once as we hooked on to a whale, the line spun so fast around the post, it actually smoked.

This whale boat, besides it's sail, was equipped with a small motor. Henry's boat did not have a Jap gun, but a hand-iron—a weapon resembling a spear to which a bomb was attached. This, at the point of concussion would explode, thus slowing up the whale a great deal. An outboard motor completed his equipment.

It must be pointed out that whaling as it is done in modern times is far different than this hand whaling that Capt. Lane was attempting. The modern whaler is a large, steam vessel of 10,000 tons or more, averaging 15 to 16 knots per hour and equipped with at least a dozen large, modern guns, each with an expert gunner behind it. Small chance for any whale to escape. And, now, even a new departure, that of killing whales by electricity is being practised by Norweigian whalers. However, Capt. Lane's Jap gun, thanks to his deadly skill and markmanship, proved a very efficient weapon, especially when it is to be remembered that these small boats tossed like egg-shells in any rough seas, and it almost always was very rough, too, the mall part of the whale that was exposed also aided in making the whale a difficult target only 10 feet away.

Misfortune dogged us at the beginning. These whales were proving to be too elusive. And very early an incidnt occurred that very nearly caused our expedition to end in disaster. One of the ever present elements of danger and hazard almost turned into tragedy. Capt. Lane had made a hit with the harpoon, deeply embedded in the whale when it took off at a terrific burst of speed. The rope had come off the snubbing post accidentally, and it was being pulled through the notched bow out of the box, which contained the whale coil. Writhing and twisting as it flashed out of the box, it menaced the safety of most of the crew and the Captain. If a coil caught around anyone, they would have been jerked into the water—broken an arm or leg perhaps. Capt. Lane grabbed desperately for the rope, caught it and tightened his grip, but could not hold it. It seared through the flesh of his fingers, like a hot iron, almost to the bone and he had to let go. As a last resort, he drew his knife and cut the rope at the bow, the whale disappearing to be found sometime somewhere with a harpoon in him, and dragging 50 fathoms of rope after him. Capt. Lane's hands were treated by Rosson that night, and the next morning the weather dirty and the sea rough and the Captain's hands swathed in bandages, off they went, rather, I should say, we went, for I went in Capt. Lane's boat with an Eyemo camera.

*—This Expedition sent out by the Metro-Goldwyn-Mayer Studios on their picture "Eskimo" included in its personnell Richard Rosson, Director; Leonard Smith, A. S. C., Chief Cinematographer; Paul Vogel, A. S. C. second Cinematographer and Albert Scheving, A. S. C. and William Foxall, assistant cinematographers.

Whaling In the Arctic

by

Paul C. Vogel, A. S. C.*

All morning we chased after whales with no success and at two o'clock that afternoon, after returning to the "Nanuk," it was decided that we proceed to Cape Serge and Wrangel Island, far to the North above Siberia. Capt. Lane persuaded Rossen to try once more. Shortly after we had started another group of whales had been sighted. We set out and almost immediately singled out one of them and gave chase, paddling, in addition to our sail. Then the unexpected happened. A fair shot and Capt. Lane sunk his harpoon deep into the whale. Out went the slack coil of rope in the bow and down went the sail and mast as rapidly as possible. I had photographed the shot with my Eyemo and held my breath waiting for that rope to tighten first, and then to feel the boat being dragged through the seas. The rope drew tout but we could not see it out there ahead of us. And the boat did not move! Something was wrong. I looked at the Skipper in front of me—he was bent double over the bow, peering straight down into the water. I looked back at the Eskimo crew. They were dead still and I could see that they, too, were wondering. Then Capt. Lane yelled, "Hell—that baby's dead! I've killed him." I couldn't believe my ears nor his statement. How could so small an object as that 3 ft. harpoon deal out death so swiftly to so enormous a mammal as that whale, which to my inexperienced eyes, was unbelievably large—but then I had no more time to consider this question. The Skipper rapped out the order, "Pull in the line." This was attempted but the rope did not yield. The Skipper announced that we'd have to wait for more man power. Soon Rosson and Smith drew up in the camera launch and shortly after Henry's boat. Some of his Eskimos transferred into our boat and they pulled and heaved. Slowly, foot by foot, the rope came in; the bow of our boat barely out of the water. After what seemed hours, I saw the dim, dark mass slowly take shape down there. The Skipper knew! The whale was dead! As soon as his back broke the surface of the water, Capt. Lane rammed the long tube with its sharpened tip into the whale and from a compressed air tank forced a quantity of air into him. Our load lightened, the whale being blown up and floating now.

The "Nanuk" was signalled, it came up close, our whale was tied on and towed behind us as we headed for the ice nearby, where the next day we were to shoot the "cutting up" scenes. It was then almost nine in the evening. Though still daylight, the water was black and so was the whale. We had been up since four A. M.—a gang that was dead tired, but smiling happily. At last we had gotten our whale—not the last either, for we had many more shots to get that needed healthy, live whale, showing towing our whale boat.

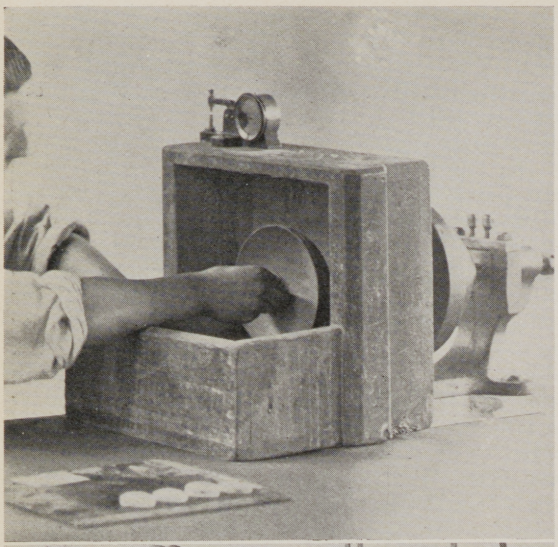
Not until Capt. Lane had shot his sixth whale did Dick Rosson feel satisfied that he had a completed episode for the picture "Eskimo." It was this sixth whale that furnished the greater part of the thrills we experienced in our whale hunt. This one did not die so soon, rather it stayed alive long enough to tow, not only the Skipper's boat, but also Henry's for miles.

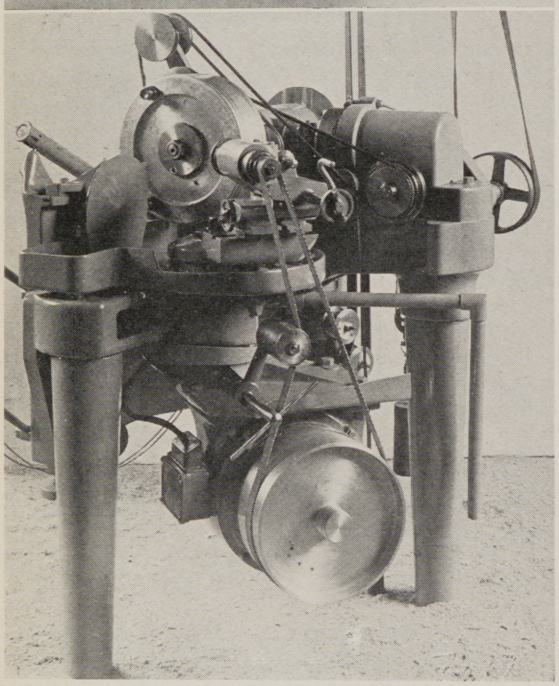
Picture, if you can, these two small boats, both tied by harpoons, to the whale; their sides banging continually against the sides of the whale—it's ever dangerous tail, or flukes, as they're called, within arm's reach, one blow of which would smash either boat into bits and send us into the water. Imagine also if you can, one of us leaping from the boat onto the whale's back, a bit of action needed for one of the scenes, when he had stopped for a few moments, tired after his long pull—not knowing even if it were possible to hold my footing on that enormous thing that seemed so slippery, and then leaping back into the boat just before the whale started off in what is known as his death flurry—an incredible burst of speed that made us feel if we were flying over the waves, knocking and careening against the whale's sides, holding on for dear life. On and on, it seemed a life time and finally the hunt was over. The whale stopped and died.

And every second of that terrific struggle was photographed, for Len Smith, in the little camera launch, so light that one could hardly keep his feet, kept cranking away. Magazine after magazine of film was exposed, getting every bit of that action. In the rushes, weeks after at the MGM studio, I saw that he had actually gotten every single detail of that wild, crazy scene. It's hardly understandable how he and his assistant could have changed magazines so rapidly that nothing was lost. And once more I experienced the thrill of the hunt as I witnessed it on the screen. Our work for the picture "Eskimo" was done—we had accomplished what we went after. Too much commendation and praise cannot be extended to Capt. Lane for his dogged perseverance, his uncanny knowledge and skill in hunting these huge mammals: To Dick Rosson for his admirable direction and organization; and to Leonard Smith for his extremely capable manipulation of the camera in what was truly a difficult and hazardous situation. To all the others for their willing, cheerful and capable help that they rendered.

(Continued on Page 290)

Camera mounted in the whale boat and a corner of the good ship "Nanuk."





At top Fig. 15. At bottom Fig. 17, a semi-automatic Grinding Machine.

Mechanical

The Production of Lenses (Glasswork).—In order to illustrate both the primitive methods of making lenses and the mechanical engineering methods, I will describe the processes in sequence, beginning with the raw glass.

A feature which distinguishes the working of glass from the working of metals is the fact that cold glass has no plastic phase. If strained beyond its elastic limit it ruptures immediately. Its elastic limit and ultimate stress are coincident. And that fact makes it impossible to cut glass in the sense in which we cut metals, for since there can be no plastic deformation of the chip it is impossible for the edge of a cutting tool to penetrate glass, as it does in metal, to determine the exact surface of separation of the chip from the work. What we do in shaping glass, when "cutting" it with diamonds or grinding it with abrasive grains, is very largely to follow the process used by prehistoric men who "knapped" flints and broke conchoidal flakes from the surfaces of these stones.

The first step in making a lens element from a plate of glass is to form the lens blank as a disk. And the primitive way of doing this is indicated in Fig. 8. It is to cut a square of glass with a glazier's diamond, then with the soft-iron pincers called "shanks" to break away the corners of the square until the disk is roughly circular, and finally to smooth the rough edges by grinding them by hand, as shown in Fig. 9, on a cast-iron lap fed with wet abrasive such as coarse emery or carborundum.

Over forty years ago I investigated systematically the problem of sawing glass by means of sheet metal saws, formed as circular disks and as tubes, whose edges are charged with diamond dust.

The variables investigated were: (a) the metal for the saw blade, (b) its physical condition, (c) its thickness, (d) the type and source of diamond, (e) the size of diamond particles and how to procure these, (f) the way of securing the diamond particles in the edge of the saw, (g) the linear speed of cutting, (h) the rate of penetration of the saw, (i) the manner of controlling the rate of penetration, (j) the coolant, (k) getting rid of detritus.

Fig. 10 shows as a result tubular saws whose annular upper edges are charged with diamond dust. The open joint helps the escape of detritus. The metal is of nearly pure iron, known as Lapidary plate. The wire winding of the tube to its chuck was adopted after trying more elaborate means. The diamond is held in the saw edge by first notching the edge with a chisel as a file is cut, filling the notches with diamond dust and oil as a paste, and closing the notches, to trap the dust, by rolling with a grooved roller.

Fig. 11 shows the automatic notch-cutting machine. Fig. 12 shows part of a machine which cuts glass disks with these cutters, driving them under rigid control at 850 linear feet per minute, feeding a coolant continuously through the spindle into the cutter and controlling the rate of penetration permissively with a predetermined maximum value.

Fig. 13 shows a slab of glass and disks cut from it. These are produced in a fraction of the time taken by the primitive method. They are truly circular, they can easily be held to uniform diameter within 0-005 inch, and there is great economy of material.

Fig. 14 contrasts the primitive waste with the scientific economy. From the same amount of material thirty-two poor and costly disks are produced by the primitive method, and forty-four good disks are made in a fraction of the time by the scientific method. And yet how often do we encounter the fallacy that to make or do anything, however indifferently, by primitive methods is better than to do it well and more abundantly by mechanical aid!

The next step in making a lens from the disk of glass is to roughly grind its two faces to the requisite curvatures and with their common axis sufficiently central in the disk. Fig. 15 shows the primitive method which is still used in many works. A cast-iron tool, a counterpart of the surface

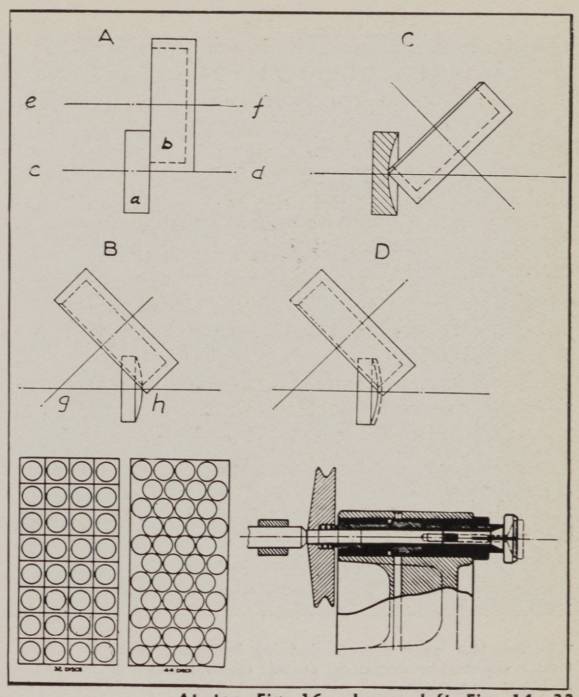
* Reprint of address delivered to The Institution of Mechanical Engineers.

Engineering Applied to Lenses

by

William Taylor, O. B. E.*

PART II



At top Fig. 16. Lower left Fig. 14, 32 disks at left and 44 disks at right. Lower right Fig. 18, Spindle.

to be ground, is rotated on a spindle and surrounded by a box in the bottom of which are coarse abrasive and water. These are thrown intermittently on to the tool by the operator's left hand while with his right hand he keeps the disk of glass pressed against, and moves it to and fro radially on, the tool. Much skill must be exercised in trying to keep unaltered the curvature of the tool.

A maker of photographic lenses has to form lens curvatures of almost any radius, from say a few tenths of an inch to infinity. He may be said to describe circles whose centres are sometimes outside his workshop, sometimes outside his city, and sometimes among the stars.

When carborundum and the bonded carborundum wheel were first introduced, I applied them to grinding lens surfaces and thus dispensed with the metal roughing tools and their attendant evils.

The applied geometry is illustrated in Fig. 16. At A, "a" is a rotating disk of glass shown in side elevation, and "b" is a cup-shaped abrasive wheel. When set as shown, with the glass axis "cd" parallel to and in one plane with the wheel axis "ef", the wheel generates on the glass a plane surface. That is geometrically a spherical surface of infinite radius.

At B the wheel axis is inclined to and intersects the work axis at "g", and the annular edge of the wheel crosses the work axis at "h". In this position the wheel generates a spherical convex surface of radius "gh". This radius may be varied by varying the inclination of the axes and so displacing the point "g" of their intersection. At C the wheel is inclined in the opposite direction to grind a concave surface. At D it is shown that as the wheel wears, the thickness of the lens and the radius of its surface increase equally.

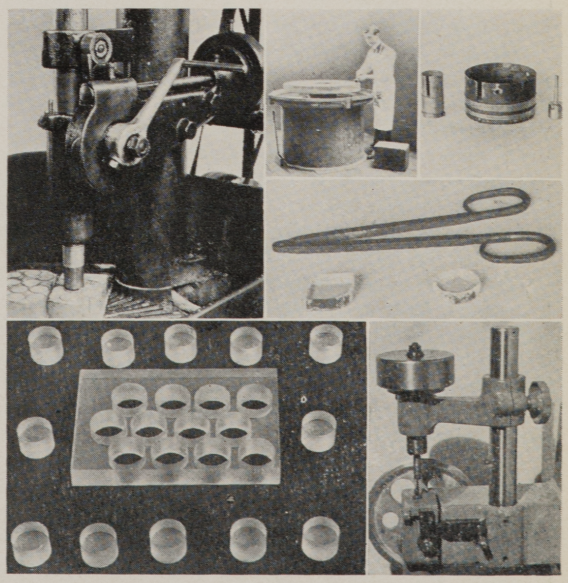
By this means one can, without special laps, grind lenses to any required curvature, and any number can be ground in succession to one uniform curvature, provided only that the wheel is advanced along its axis to compensate its wear. And if the rear surfaces of all the lens blanks be successively positioned alike, it is only necessary to maintain the lens thickness uniform to maintain also uniformity of curvature. A test of one is equally a test of the other.

The equation of curvature is $R = \frac{D}{2 \sin a}$, where R is the radius of curvature, D is the diameter of the abrasive annulus at the work axis, and a is the angle between the axes of work and wheel.

Fig. 17 shows a semi-automatic grinding machine embodying these geometrical principles. It includes a turret carrying three work spindles of which Fig. 18 shows one in section.

After the first surfaces of a batch of lenses have been ground in this way, the blanks are returned to the chucks, in reversed direction, and their second surfaces are ground.

Upper left Fig. 12, machine cutting glass disks; Upper center Fig. 9, grinding lens disk; Upper right Fig. 10, tubular saws; Center right Fig. 8, primitive way of forming lens disk; Lower left Fig. 13, slab of glass and disks cut from it and lower right Fig. 11, automatic notch-cutting machine.



Whether this news man is dodging bullets or getting a worms-eye angle we do not know. Anyway it looks dangerous.

Birth of

IT WAS in the summer of 1905, that two gentlemen met at the old Union Cafe, in Randolph Street, Chicago. They talked of the newspaper and the motion picture. It was at this meeting that the news reel took form as an idea.

Colonel William Selig of the Selig Polyscope Motion Picture Company, and Mose Koenigsberg, in charge of the news affairs of the Chicago Evening American, the property of William Randolph Hearst. They talked about syndicate stories, and stories for the motion picture.

"This film business is coming too fast, we are going to be hard up for ideas." Selig had the foresight to produce short subjects in conjunction with newspaper articles. It was proved then that the motion picture industry was a promising business. Events began to develop. The screen and press were brought together. R. A. Farrelly of the Hearst Wire Service assigned Edgar B. Hatrick to organize photographic departments in all the Hearst papers in the form of a wide world news picture syndicate service.

Along in the winter of 1908, Pathe Freres began photographing various important news items on motion picture film in France and throughout Europe. These news flashes were used as short fillers, after a reel of feature productions were run. The public demand for this kind of subject prompted Pathe to produce a full reel containing only the news of the day. In 1909, Pathe released the news reel as part of their regular output and from then on it was known as the Pathe Weekly.

About this time a company was sent to the United States to produce motion pictures. A well chosen staff of trained technicians were included in the executive roster. The camera department of this unit was managed by their capable cinematographer J. A. Dubray. Today he is the Western District Manager for the Bell and Howell Camera Company in Hollywood.

From overseas came many pet ideas of Pathe new to the industry which was striving for recognition in the theatres here. Hardly had Pathe become acclimated to the New York "Hustle and Bustle," before Dubray began to photograph, in and around New York, current news events of the day. So popular became the reel that additional cameramen were placed on the news camera. Dubray assigned Victor Milner to the job, between layoffs on production in the studio. Later Faxon Dean and Eddie Snyder were added to the staff.

In December, 1910, the first news reel was truly organized and released in the United States. The Pathe Weekly now became a subsidiary to the Pathe Productions and was released over the entire Keith Albee and Orpheum circuits.

Slowly the staff grew, news photographers were placed in all the key cities throughout the world. In 1913, the editorial staff grew to a regular institution. P. D. Hugon was the manager, Eric Mayail the assistant, Emanuel Cohen and Al Richards were the capable editors.

Victor Milner, Faxon Dean, Burton Steene, Bill Harrison, Ben Strutman and Carl Felstad comprised the staff on the camera detail. These men have the distinction of being the first news reel photographers in the country, and are the pioneers of news reel history, bringing to the screen the visual news events of all the world.

In the autumn of 1911, Hatrick began to cast an interested eye on the possibilities of covering news in the motion picture for the Hearst organization, but was met with disapproval by the editors. Later he purchased a camera and film, and tentatively tried to making news pictures, offering them to the Pathe Weekly, but the Pathe concern did not want to encourage so formidable a competition, so the plan failed for a time. Later Hatrick made independently a one reel motion picture—the inauguration of Woodrow Wilson at Washington, March 4, 1913. It was distributed on the screen by arrangements of Harry Warner, of the Warner Features, who today is one of the famous Warner Brothers' Vitaphone Talking Pictures. The picture cleared two thousand dollars. Hatrick renewed his campaign for a news reel. At this juncture the Selig concern issued a two reeler, "The Burial of the Battleship Maine." It was distinctly a news picture. Hatrick suggested an alliance with Selig. Then came the day when Colonel Selig went to New York to close the contract with the Hearst organization for the production of the Hearst-Selig Weekly, with news negative gathered by the Hearst staff camera reporters stationed in all the Hearst territories throughout the world. Ray L. Hall became the editor. The reel was distributed by the Selig Polyscope Company through the General Film Company. On March 4, 1913, the International News was born.

At this time, in Chicago, the Universal News had been organizing their news reel editorial offices. Their camera crew consisted of Joseph T. Rucker, U. K. Whipple and Frank Dart. Gaumont News flashed across the screen after Universal started, headed by Pell Mitchell, with Larry Darmour and Al Goald in the photographic departments.

Free lance news photographers were known to exist at almost the beginning of the regular staff men. They soon learned the requirements which are characteristic of the general make-up, composition and standards typical to the news reel. This peculiarity is still evident today. These men photographed happenings in the outlying territories,

*Acknowledgment is given to Terry Ramsaye and his works, "A Million and One Nights," and appreciation and thanks to J. A. Dubray, Joseph T. Rucker, and many of my friends in the news reel profession, who unselfishly gave me information, dates, movements and photographs.

The News Reel Its Origin and Pioneers

As compiled by

George J. Lancaster, A .S. C.

Getting sports is quite a simple thing compared to other stunts a news man is called upon to do. Here we have a crew shooting a big gridiron battle.

which were not covered by the regular staffs. They sent in their film on a footage basis. Many of the news reels paid as much as one dollar per foot for all footage used nationally and reimbursed the photographer with raw stock.

At this stage of the game, the nationals were confronted with a new situation. Many an energetic photographer who owned a movie camera launched into the game, producing local news reels. They promoted the idea with their home town newspaper and theatres. For a time until the advent of sound they were popular and had a tendency to displace the regular news from the screen in that town and adjacent towns. These boys concentrated entirely on local news events and happenings. Naturally this created competition, and a news reel war was on.

The Nationals began producing locals in connection with the regular release, and concessions were made to the theatres. In some instances locals were bought out, others were forced to cease operations. The staff cameraman in some cases had to develop and print his own film in order to be on the release date a few days ahead of the opposition.

Soon the news reels found their way into Washington. In the latter part of 1911 and the beginning of 1912, when Congress was in session, for the first time the activities and proceedings were brought to the screen. A special train had been chartered from New York by the Pathe Company to transport the electrical equipment for the lighting of the interiors of the capitol. On February 14, 1912, President William Howard Taft signed the bill that made Arizona a State. Sitting at the Presidential desk, with pen in hand, President Taft was photographed by Faxon Dean.

Then sprang from the papers a recognition of the motion picture. The Chicago Tribune soon became aware that the readers were following the film, and put in a movie section and placed Jack Lawson, a rewrite man, in as critic.

The Chicago Herald was not to be outdone and quickly followed by installing in their sheet a photoplay department with Louella O. Parsons as head of the department. She was on the staff of the Essanay scenario writers. In 1915 the list of film critics totaled over four hundred. At last the newspaper news reel found a concrete foundation; it was a product which had come to stay and play a regular part in the theatre presentation schedule.

Now we come to the place where the World War upsets the affairs of the motion picture world. On April 6, 1917, the United States Government declared war on Germany. About April 14, 1917, George Creel was appointed chairman of the committee which organized the Department of Public Information. It was a difficult assignment—to be at one and the same time the censor and press agent for the war. His job was defined as "Selling the War to America." This was done through the medium of motion pictures and the Red Cross. The motion pictures of the war were made for a time by the Signal Corps and a handful of American news reel photographers "Over There." This little one thousand foot reel had the burden of telling us pictorially about America's part in the war. Nearly a year after the war the headquarters of the Department of Public Information moved to No. 10 Jackson Place. Later the department died intestate, and the picture production department reverted back to the Signal Corps. So ended the attempt to organize all the news reel staffs and concerns into one regiment.

It may be well to relate here some of the countless adventures of the war camera reporters at the front. There are several outstanding exploits worthy of mention. Larry Darmour was assigned to the Signal Corps photographic service. He was on the staff of Gaumont Mutual Weekly under the editorship of Pell Mitchell, who assigned Darmour to the "Ford peace ship." He was next in uniform at Chateau Thierry, arriving there on the eve of the great advance. He strolled around looking for camera locations and became completely lost. Night came, so he rolled up and went to sleep in a shell hole. The most eventful morning came by an exchange of barrages, and Darmour awoke to find that he had been the first over the top by several hours and in the middle of "No Man's Land," between the lines. He returned from the war with pictures

(Continued on Page 288)

Edward O. Blackburn Honorary Member of A. S. C.

Edward O. Blackburn, A. S. C.

IN ITS fourteen years of existence the American Society of Cinematographers has bestowed Honorary Membership upon only three men associated with the industry. It is the highest honor the Society can give to any individual. It has been granted to but three other individuals in the history of the Society: Thomas A. Edison, George Eastman and Albert S. Howell, whose achievements are too well known to require repetition.

This membership is given only for merit, achievement or services given to further cinematography or the interests of the cinematographer. This honor was bestowed upon Blackburn for the many services he has rendered the Cinematographer both as a body and individually. He is styled one of the truest friends the Cinematographer has in the motion picture industry.

The resolution extending this Honorary Membership to Blackburn sets forth the fact that he is and has long been the truest and most devoted friend of Cinematographers and of the American Society of Cinematographers. It acknowledges the fact that it could not begin to list the innumerable acts which have bound him to the hearts of its members—which has given birth to an affection not to be expressed in mere words.

In extending this membership to Blackburn the Society said in part:

"This Honorary Membership which we extend to you is, we hope, some slight token that your friendship to us is both appreciated and reciprocated, and we hope that its acceptance may give you the same measure of sincere happiness we feel in extending to you our highest honor."

Blackburn has long been associated with the Hollywood office of J. E. Brulatour, Inc., as Vice-President and General Manager of their Pacific Coast activities. In this capacity he is in daily contact with the Cinematographer, but he has not turned this contact to his profit; but has utilized it to further the interests of the Cinematographer as individuals and as a group. This unusual and unselfish friendship has created an admiration and a respect for Blackburn that is extended to but very few people regardless of their walk in life.

Remarkable

EMULSION

THE exceedingly fine grain of Eastman Background Negative easily meets the chief requirement of composite photography. But, in addition to minute grain this new negative has surprising speed and excellent processing characteristics. Exhibiting a rare combination of qualities, it stands out as a remarkable emulsion...one that is gaining in importance every day. You are urged to explore its wide possibilities. Eastman Kodak Co. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN

Background Negative

WHEELS OF INDUSTRY

Dunning Grainless

• The Dunning Process Company of Hollywood have evolved a grainless developer for 16mm negative based on the Paraphenylene-Diamine which was discussed at length in a recent article of this magazine.

This developer, which Dunning is terming Dunning Grainless Developer, is claimed not only to give finer grain, but also a greater tone definition than has heretofore been possible in 16mm. In the photographing of velvets, furs, etc., it is claimed the texture of the velvet is more noticeable and in the case of some furs it is possible to distinguish the type of fur. Also it is possible to secure a low or high key of photography that is said to be highly pleasing to the eye.

B & H Humidor Can for 8mm 200-foot Reel

• A fine B & H humidor can is available for storing 8mm film on the new B & H 200-foot 8mm reel. This can is of aluminum, which does not rust. Its design and construction are the same as the popular B & H 400-foot 16mm humidor can, including the pressed rings which give rigidity and facilitate opening, and including the patented tell-tale disk which tells when the humidor pad needs moistening.

Rolleflex Plugs

• According to announcement from Burleigh Brooks extra metal plugs or caps to fit over the red windows for the film numbers in the Rolleflex camera are now available at the extra cost of 35c. These permit the use of the new Super Panchromatic film with the greater ease and convenience.

750 Watt Filmo Projector

• The Bell & Howell Filmo R Projector, which has previously been equipped with a 500-watt 110-volt lamp, may now be had also in a special model which uses the new 750-watt 100-volt T-12 lamp. With this lamp about 50 per cent greater picture brilliancy is realized than with a 500-watt lamp.

The 750-watt Model R has a special lamp house base and a fixed resistance unit. Otherwise it is the same as the original 500-watt Model R. That is, it offers these features: aero dual cooling, automatic rewind, manual framer.

16mm Sun Shade

• The announcement by Burleigh Brooks of their combination sun shade, filter holder and mask device will have considerable interest to many amateurs who are desirous of attempting the effects secured with these devices.

According to the announcement the device comes with several different masks and a series of 2-inch color filters as well as diffusion filters. It is so designed that it can be fitted to practically every 16mm lens without any additional fittings.

New B & H 8mm 200-foot Reel

• Bell & Howell announces a projection reel which will not bend out of shape, which will always admit and pay out film without binding. It is built entirely of steel and has a satin finish. The flanges are springy, will not take a set. The hub has the B & H self-threading feature. Flange spokes are calibrated to indicate film footage. Wear at the spindle holes is minimized by the hardness of the steel. Capacity, 200 feet of 8mm film.

Panotomic For Rolleflex

• The new Pantomic emulsion developed by Eastman primarily for the Candid type of camera is now announced for cameras such as the Rolleflex. This film is very fine grained and is said to be especially desirable when enlargements from small negatives are to be made. This is made in No. 117 or 2¼ x 2¼ size.

B & H at Exposition

• According to a list sent out by Bell & Howell Company there are 36 installations of Bell & Howell 16mm projectors at the Century of Progress Exposition in Chicago.

These projectors are being used by various concerns as well as the United States government having exhibits at the Fair. Included among them are their regular projectors, continuous projectors and the Filmosound projector.

Combination Filter

• Harrison & Harrison, filter manufacturers, announce a new combination filter designed especially for the small filter holders. This filter in one piece of glass will have the combination of K1, K2 and K3 filters, each one divided by a line so that they can be properly placed before the lens. It is the intention to work out other combinations with such filters as the Aerio series and the Red filters.

Northeast Reflectors

• The Northeast Products Co. of Tewksbury, Mass., announce a new reflector. It has a solid tripod stand and reflectors may be attached at any part of the stand, grouped together or spaced as desired. It is claimed they are adjustable to any angle and may be lowered or raised at will.

Pan American Release

• According to announcement from Pan-American Cinema Studios that organization will shortly release their first professional sound on film 16mm subject. This organization specializes in 16mm film single and double system recording, dubbing sound to silent subjects and reducing 35mm Sound on Film to 16mm.

Goerz Filters

• According to an announcement from C. P. Goerz American Optical Co. that organization is marketing a Pan-Ortho Green Filter manufactured by Dr. Keiner. It is their claim this filter is equally efficient for the non-red sensitive orthochromatic emulsions. They also market a blue filter for red absorption as well as a red filter.

Government Bnys Sound Projectors

• The Agricultural Department of United States Government has ordered one hundred of the Victor Animatograph 16mm Sound Projectors, according to an announcement from that company. The 16mm Sound Projector is being used widely by various industrial concerns who have produced motion pictures for advertising purposes.

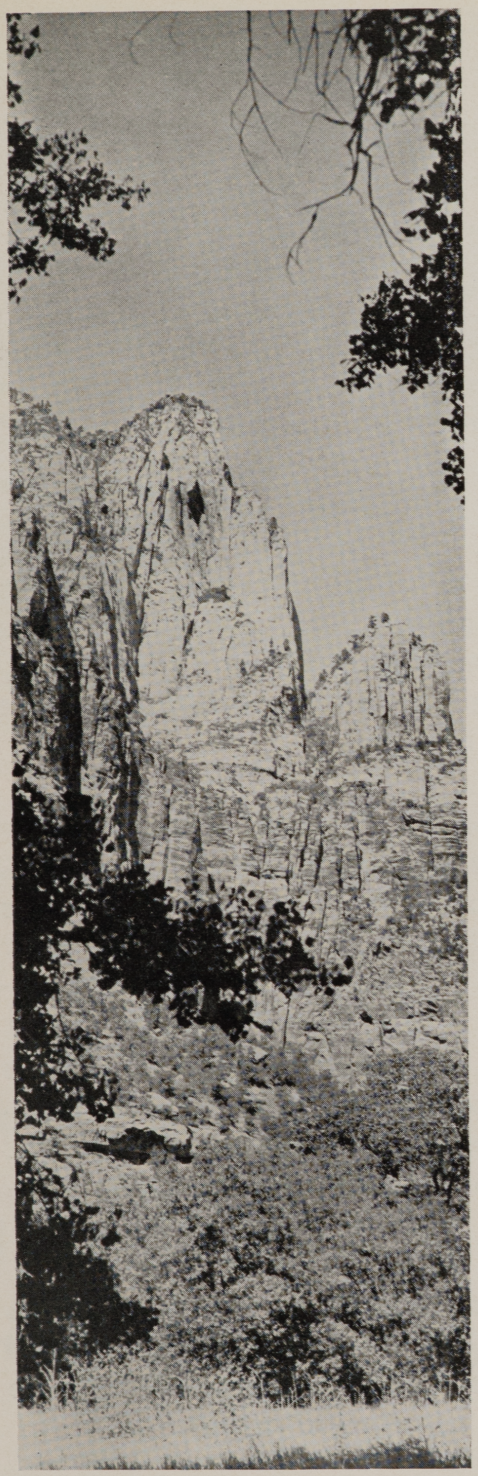


Photo by H. W. Voss

• PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

AMATEUR SECTION

Contents . . .

Next Month . . .

• PERHAPS THE FOREMOST NEWS will be the Announcements of the 1933 Amateur Prize Winners.

• RAYMOND HARVEY will tell you of another home made contraption for his camera . . . It's a dandy.

• KODACOLOR CINEMICROGRAPHY will interest those who like to delve into the science of things.

• JUST AS A HOBBY we found a Cinephotographer who takes his camera to the theatre with him . . . Find out just what interesting pictures he gets.

• WE WILL HAVE A FINE STORY on securing effects in your titles. . . . and there will be other interesting features.

WE THANK YOU!

Has been a phrase that reached our desk approximately two thousand times during the past year. The sincere thanks of the Amateur cinephotographer for questions answered, for help rendered in his technical troubles and for criticisms given him on his pictures.

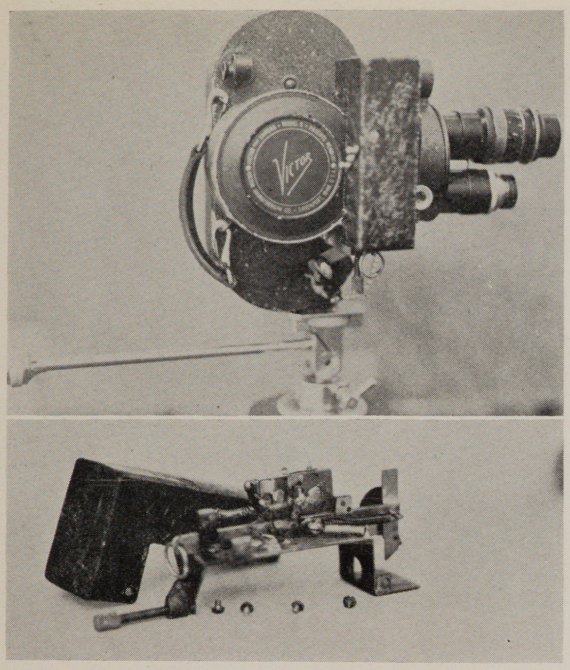
Since the closing of the contest October 31, 1932, more than 1200 amateur pictures have been sent in to us for constructive criticism and suggestions as to how their work on that particular picture could be improved. We have always attempted to do this promptly, but at times so many would reach us in one day that we would have to delay the returning of the film until we could give it the attention we would have given it if it had come in singly.

When occasion arose we would call in one of the members of the AMERICAN SOCIETY OF CINEMATOGRAPHERS to render his decision on some particular phase of picture making. We did this because we knew that man was the greatest authority in his line. And we gave that amateur the benefit of that man's experience.

This service was given and will continue to be given the amateur by the American Cinematographer and the American Society of Cinematographers so that the amateur may secure a better grasp on what constitutes good pictures, good photography, good editing and good all around workmanship in the making of motion pictures.

Many fine examples of the cinematographic art have come to us—examples that were a great pleasure to look at and to run over several times. They showed the author had a fine concept of what constitutes a picture. He had a deep love for his hobby and a sincere purpose in the things he was photographing.

And we have learned a great deal from these pictures. We have discovered many things that the amateur should know—and other things he would like to know. It has helped us in our work—in our effort to give you the sort of information in the pages of the American Cinematographer that would be most helpful to you.



At bottom is shown Foster's self timer and the parts he used. At top as it is applied to the camera.

Self-Photography With the 16mm.

by **Waldo Johnson**

Things with a hammer, saw, screw-driver and file that HIS fellow Stanley Foster is a clever chap. He does make me a bit dizzy at times.

We were headed for a hunting trip up in the Canadian lakes last summer. Included in Stanley's duffel was a 16mm motion picture camera. In fact when the unloading time came Foster seemed to fondle that camera more than he did the guns and rods. That hadn't been the case in other years. In fact in the past he sort of bragged about the fine accuracy of his guns and the superiority of his type of bait. But this last year I was afraid he had fallen from the belief—that he had become a rank disbeliever. That camera was his wife,c hild and religion.

In fact he had gone further into the intricacies of photography than I thought it would be possible for one man to go in such a short time.

But the crowning event of the whole bag of tricks was when he showed me a contrivance he had built that would permit him to get into the picture. In other words a gadget that when set would let him hop into the scene and give him time to take his proper place before the camera would start grinding and taking the picture.

In the illustration you will see this device attached to the side of a Victor camera. This timer is wound by means of the winding bar which shows on the rear side of the photo in which the device is attached to the camera. The ring at the bottom is attached to a timing bar which has three markings, namely, 10, 20 and 30 seconds according to the setting of the timing bar. There is a small trigger, which, when released, starts the timing mechanism which operates for 10, 20 or 30 seconds according to the setting of the timing bar. At the expiration of this time a small red flag pops up at the top and a plunger shuts down on the operating button of the camera.

This gives the operator sufficient time to get out in front of the camera and start his action before operations commence. The camera runs for a period of 30 seconds and then the plunger is released, at which time the small red flag drops down out of sight to indicate to the persons in front of the camera that the acting period is over.

As a result of using this gadget, Foster was able to get pictures which otherwise could not have been gotten without the aid of a third party. As an instance: He set the camera on the tripod with the timing device set for 30 seconds. This gave him time to get out into the canoe with me on the lake in front of the camera and to pull a fake upset. Another scene shows us drying our clothes before the camp fire with Foster in a very bedraggled looking suit of woolen underwear. Still another scene shows me shaving Foster and cutting his hair preparatory to making the trip home.

These to me were very interesting highlights of the 400-foot reel of our trip. Without Foster's clever gadget these shots would have been impossible.

Foster worked out this idea entirely by himself, and built the complete device, excepting the small timing box which is incorporated. He did this work in his basement with a file, a drill and a pair of tin snips. It is clever and at the same time simply constructed with very few parts and nothing that can get out of order. The lower photo of the illustration on this page shows the device with all of its parts and the housing which holds it.

The device is very easily attached to the Victor camera, as you will note from the illustration. It is so located that it sets immediately over the starting button. There is a set screw at the bottom which holds it firmly in place. However, it is necessary to remove the box to wind the camera spring. This, however, can hardly be considered a drawback, as the operator usually does not appear in every scene. Thirty seconds of running time gives plenty of footage for any scene. If you will figure this out, you will find that it will give you twelve feet of pictures, which is considered above the average footage for a scene.

Before putting this gadget into action Foster was always very careful to mark off the picture line. This of course called for a little assistance on my part with stakes. While he looked through the finder and directed me, I would stake

(Continued on Page 288)

Making

DOCUMENTARY films have become so popular in the past few years that special theatres now run a complete program of news, interest and travel films. Many of the world's largest cities support as many as five or six of these houses. Thus the producers have been forced to scour the world for material with which to keep up the weekly change of program. The aim of every far-sighted producer is to build up reels that will please the ever critical audience and bring prestige to his product.

The Magic Carpet of Movietone is a series of travelogues in natural sound, covering all corners of the globe, produced by the Fox Film Corporation. Through the medium of the Magic Carpet, the alluring tales of the Arabian Nights come true and all can take a flight around the world in time rivalling that record breaking flight of Wiley Post. To get better material than the old stereotyped scenics, special Magic Carpet crews have been sent out from New York to cover the high spots of concentrated civilization as well as the isolated regions of the globe.

The amateur is also breaking away from the old idea of bringing back scenes of himself posed on the Rock of Gibraltar, or balancing uncertainly on a camel with the Pyramids as a back drop. He, too, strives to make an action picture record of the places visited so that he may entertain his friends with a vivid reproduction of all that he has seen. The satisfaction of producing a film in keeping with the possibilities of the cinema art is encouraging amateur and professonal alike to more strenuous efforts along this line.

While the finished product of both professional and amateur varies with circumstances, there are many general rules that can be profitably followed.

The first requirement of a high class documentary travel film is local atmosphere in every scene. This is done by including some landmark or object of local color in either the background, the foreground or as an integral part of the composition of the scenes.

Should your location be the Rocky Mountains, then mountains, waterfalls, lakes and forests make up the back drop. In Florida, palm fringed shores, tropical vegetation and beautiful cloud effects should be the foundation of all scenes. In the land of the Moslem, domed mosques and graceful minarets give the necessary local atmosphere. Vesuvius is unmistakably Naples. Big Ben and the Tower Bridge turn your thoughts to London, while all the world recognizes New York by its collection of giant skyscrapers.

While these prominent landscapes are best adapted to the introductory and closing scenes, they should also be used throughout the body of the reel wherever it is possible to do so without monotony.

Putting local atmosphere in the foreground is accomplished in many ways. In the tropics, shoot some scenes through tropical foliage and others under a palm frond. A general view of the vast stretches of the average flat desert is no picture at all by itself, but add an Arab on a camel in the foreground and the scene immediately takes on depth and life. A general view of a sugar cane field is improved by placing an ox drawn cart in the foreground. If nothing else is available, use some stray blades of grass in one corner of a prairie scene.

The details of dress of the people who are your impromptu actors can be featured to establish the location. Wooden shoes immediately place the scene in Holland; ten gallon hats take you to our West; grass skirts to the Polynesian Islands; kimonas to Japan and fur clothing to the frozen North.

With this idea of atmospheric foreground in mind, many otherwise dull general views can be made artistic, interesting and unmistakably identified.

Make your film live and breathe the atmosphere of your subject by the use of close-ups. Here's the safest rule to follow. Immediately after your general view, move in and take a close-up of some integral part of it. If a windmill turning in the breeze is an important part of your general view, then the logical close-up would be the revolving sails filling the screen. A general view of a native woman weaving homespun should be followed by close-ups of the hands and the feet operating the loom. Generally speaking, any scene you make can be followed by a close-up.

Close-ups give the opportunity to show details of the faces of your actors. Each scene should appear as natural as possible, so it is obvious that a face concentrated on some definite task is vastly more interesting than a scene of someone staring into the lens. Also, in making close-ups of people, watch out that they don't take off their hats, reverse some object with which they are working, or light a cigarette in between your general views and close-ups.

It is important to match the action of the general view with the close-up. If you show a native cart moving across the foreground from left to right, then your close-up of the characteristic wooden wheels must also move from left to right. It is well to remember that after making such a general view, you can always chase after the wagon for the close-ups, even though in a different location. Or you can make close-ups of the wheels of a similar cart. Close-ups of outstanding action keep your film moving.

The problem of locating and filming the outstanding features offered in the place you are covering is more difficult. Any collection of motion picture scenes is more interesting

In the picture at the left Charles W. Herbert, A.S.C., is shown talking to a Sahariano during the taking of a "Magic Carpet."

A Magic Carpet

by

Charles W. Herbert, A. S. C.*

if grouped into definite sequences. Travel films can be made up of the highlights of a trip, showing how the journey was made, the various places visited and the outstanding features found there. (The Magic Carpet "Mediterranean Memories" followed this pattern). However, the camera enthusiast who has the time and the will to make a more complete record of his trip can group the material together according to the countries, sections or cities visited. And often complete reels can be made of picturesque industries or colorful groups of people. This same principle is applied in weaving a Magic Carpet.

To film an industry you must select one with enough variety of scenes to hold the attention and not bore your audience. Fishing reels are generally good if the fish are large or the quantities handled are enormous. The cattle and sheep industries are well suited to the motion picture camera, for, in addition to the beautiful and interesting scenes, they furnish enough action to make a fast moving film. The ordinary process industries such as cotton, steel and coal are usually difficult to cover.

Many organized bodies of people, especially military and naval units, make good subjects for our reels. For example, "The Square Rigger" was made entirely on a Polish Training Ship, showing the cadets and officers at play and at work sailing the vessel. "The Desert Patrol" shows the daily routine of a more picturesque group—the Saharianos, Italian camel mounted troops of Tripolitania.

The selection of subject matter for the body of the film cannot receive too much advance attention, especially if your aim is to produce a reel that can be made up effectively and tell a definite story.

The average cameraman has a rough idea of what is to be found in a new locality, but it is good policy to do a little research work before tackling the job. Travel books, tourist booklets, steamship and railway advertising folders all contain information and suggestions for the photographer and many ideas can be picked up on the ground by talking to the natives at every opportunity. Often it is a trying job to listen to all the suggestions given by the local boosters, but you never can tell when you will discover something really worthwhile in this way. And many apparently wild goose chases often lead to the discovery of a good feature.

In covering a locality, plan to group the material into definite sequences, such as:

General atmosphere
Historical landmarks
Industries
Customs
Native dances
Celebrations
Religious features
Military activities
Spectacular action

To save time, trouble and film, it is best to weed out all the possibilities in each group so that only the outstanding remain in each class. For example, every country has historical landmarks, but only a few of the most important need to be photographed, as nothing will tire an audience quicker than a long drawn out series of ruins and buildings without action.

All countries have industries, so try to select only one or two that are unusual or play a part in the commercial importance of the country. Work out each sequence in this manner. I believe it is best to devote more time to one or two good features than to attempt to cover them all in a haphazard manner.

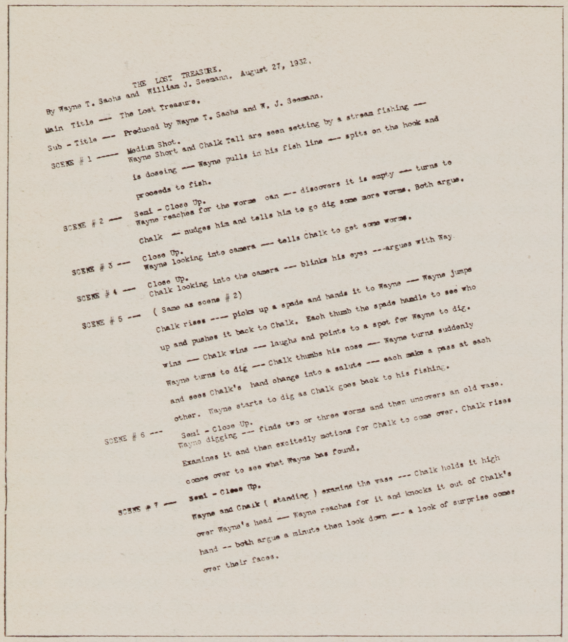
It is not necessary to go to isolated regions for material as there are always many things of interest to be found in the world's largest cities. London is an outstanding example of this fact with her street signs, lawyers in wigs, uniforms, Hyde Park, tug boats with hinged funnels, bank messengers in top hats with money bags locked to the wrist—to mention only a few of the atmospheric shots available to set off the general views.

It is not necessary to show only the backward countries, but wherever you do have the contrast of the old and the new, you can make an interesting camera study—a camel on a street crowded with automobiles or a small native sailing boat alongside a modern ocean liner.

When the subject matter has been selected, then comes the task of weaving it together into a harmonious whole, always striving for some sure fire reaction with humorous, beautiful, spectacular or cunning scenes.

If your reel shows careful selection of location, local atmosphere, variety, intimate close-ups, natural scenes, action, and above all tells the story in a clear, interesting manner, then, whether professional or amateur, you have a travel film which can be screened with pride.

*Charles W. Herbert is constantly traveling seeking material for the famous Fox Magic Carpets of Movietone. Among Herbert's recent contributions to this series are "Mediterranean Memories," "The Square Rigger," "Saharianos in Tripolitania."



THE LOST TREASURE.
By Wayne T. Sachs and William J. Seemann. August 27, 1932.

Main Title — The Lost Treasure.

Sub - Title — Produced by Wayne T. Sachs and W. J. Seemann.

SCENE # 1 — Medium Shot.
Wayne Short and Chalk Tall are seen setting by a stream fishing — is dozing — Wayne pulls in his fish line — spits on the hook and proceeds to fish.

SCENE # 2 — Semi - Close Up.
Wayne reaches for the worm can — discovers it is empty — turns to Chalk — nudges him and tells him to go dig some more worms. Both argue.

SCENE # 3 — Close Up.
Wayne looking into camera — tells Chalk to get some worms.

SCENE # 4 — Close Up.
Chalk looking into the camera — blinks his eyes --argues with Wayne

SCENE # 5 — (Same as scene # 2)
Chalk rises — picks up a spade and hands it to Wayne — Wayne jumps up and pushes it back to Chalk. Each thumb the spade handle to see who wins — Chalk wins — laughs and points to a spot for Wayne to dig. Wayne turns to dig — Chalk thumbs his nose — Wayne turns suddenly and sees Chalk's hand change into a salute — each make a pass at each other. Wayne starts to dig as Chalk goes back to his fishing.

SCENE # 6 — Semi - Close Up.
Wayne digging — finds two or three worms and then uncovers an old vase. Examines it and then excitedly motions for Chalk to come over. Chalk rises come over to see what Wayne has found.

SCENE # 7 — Semi - Close Up.
Wayne and Chalk (standing) examine the vase — Chalk holds it high over Wayne's head — Wayne reaches for it and knocks it out of Chalk's hand -- both argue a minute then look down — a look of surprise comes over their faces.

Showing style of scenario as written by William J. Seemann, cinephotographer. The full text of this scenario is contained in this article.

Preparing The Scenario

by

Karl Hale

EVEN though you may not be ambitious enough to prepare in such full detail as did Wayne T. Sachs and William J. Seemann, a scenario before going into your production, still a perusal of their script will indicate how thorough these gentlemen are in their story material. Also it will indicate the necessity of scene changes and the other details which make for good pictures.

We are submitting an entire scenario which was written and made by these gentlemen for your study:

THE LOST TREASURE
By Wayne T. Sachs and William J. Seemann. Aug. 27, 1932.

Main Title—The Lost Treasure.

Sub-Title—Produced by Wayne T. Sachs and W. J. Seemann.

Scene 1—Medium Shot.
Wayne Short and Chalk Tall are seen sitting by a stream fishing—Chalk is dozing—Wayne pulls in his fish line—spits on the hook and proceeds to fish.

Scene 2—Semi-Close Up.
Wayne reaches for the worm can—discovers it is empty—turns to Chalk—nudges him and tells him to go dig more worms. Both argue.

Scene 3—Close Up.
Wayne looking into camera—tells Chalk to get some worms.

Scene 4—Close Up.
Chalk looking into the camera—blinks his eyes—argues with Wayne.

Scene 5—(Same as Scene 2)
Chalk rises—picks up a spade and hands it to Wayne—Wayne jumps up and pushes it back to Chalk. Each thumb the spade handle to see who wins—Chalk wins—laughs and points to a spot for Wayne to dig. Wayne turns to dig—Chalk thumbs his nose—Wayne turns suddenly and sees Chalk's hand change into a salute—each makes a pass at each other. Wayne starts to dig as Chalk goes back to his fishing.

Scene 6—Semi-Close Up.
Wayne digging—finds two or three worms and then uncovers an old vase. Examines it and then excitedly motions for Chalk to come over. Chalk rises—comes over to see what Wayne has found.

Scene 7—Semi-Close Up.
Wayne and Chalk (standing) examine the vase—Chalk holds it high over Wayne's head—Wayne reaches for it and knocks it out of Chalk's hand—both argue a minute, then look down—a look of surprise comes over their faces.

Scene 8—Close Up.
Vase broken showing a folded map sticking up among the broken pieces. Both Chalk's and Wayne's feet are seen in this close up.

Scene 9—(Same as Scene 7)
Chalk and Wayne both reach for the paper at the same time—Chalk gets it and both excitedly look at it—Chalk says:

Title 1—"Good gosh, it's a map to a buried treasure."

Scene 10—(Same as Scene 9)
Both Chalk and Wayne point at the map and scan the landscape—Wayne points again at the map.

Scene 11—Close Up.
Portion of the map showing the lone tree marked with an arrow and circle.

Scene 12—(Same as Scene 10)
Wayne points one way, Chalk the other. Both argue and go out of the scene on the left.

Scene 13—Medium Shot.
Wayne and Chalk enter the scene from the right—walk away from the camera down a trail—Both stop and look at the map—and continue down the trail and go out of scene to the left of camera. Wayne carries map—Chalk carries a fishing pole. FADE OUT.

Scene 14—FADE IN. Medium Shot.
Wayne and Chalk just finish packing their donkeys and mount them—Wayne fails to get his started—Chalk dismounts—gets a can of gas and a funnel from Wayne's pack.

Scene 15—Close Up.
Chalk's hands holding a can marked, GASOLINE.

Scene 16—Chalk pours the gasoline into the donkey's ear—Sets the can down—gets an automobile crank from the pack and starts cranking the donkey in front. Smoke pours out of donkey's rear—Chalk mounts—both go out to right.

Scene 17—Medium Shot.
Wayne and Chalk riding donkeys enter from the

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How to Preserve Your 16mm. Films

by

L. Guy Wilky, A. S. C.

MUCH has been said and written relative to the best way to prolong the useful age of processed 16mm home movie film. But evidence proves that the majority of amateurs are still overlooking the seriousness of this matter and in consequence cry for help as to what can be done to save their films at a time where it is already too late. Like all amateur photographic work, the 16mm pictures suffer from the same well known loss of interest. The producer is first super-anxious to see his pictures. After he is in possession of his roll it will be projected and his interest in the roll culminates in the satisfaction and proud joy of seeing and showing good results. But right after this brief incident it happens to the average that their pictures are done with and forgotten. Where there is no interest, there is no care. After years maybe one suddenly thinks of the value and the pleasure of being able to review on the screen times and happenings long past, however only to find to his regret and disappointment that his film records have physically deteriorated to such an extent that projection is not possible any more.

If the amateur would keep in mind the cause of the unavoidable deterioration any film will meet with age if not properly taken care of, he would not begrudge the little extra expense and work involved in the proper preservation of his rolls, the value of which might unexpectedly become exceptional in the future.

The reason for this deterioration is very easily understood. A film consists of two layers, one of which is mainly gelatine, the other is composed of cellulose nitrate or, in case of 16mm film, cellulose acetate.

Considering a short piece of film hung free and thus surrounded by air it will not take long until we observe a physical change in this strip mainly noticeable by the shortening of its original length. A processed film contains a considerable amount of water mainly in the gelatine layer but also to a smaller extent in the basic compound. Above this there are different chemical solvents and "softeners" in the base which, in manufacturing the base from dope solution, cannot be removed entirely.

Due to simple physical laws these liquid compounds of water and solvents will unavoidably evaporate in event the surrounding atmospheric conditions (depending on temperature and dryness) are such that the air is able to take up these vapors.

It will therefore be clearly understood the danger of deterioration caused by brittleness and shrinkage is increased when the following factors increase:

a. Area of film in direct contact with air.
b. Volume of surrounding air.
c. Temperature of air.
d. Dryness of air.

The loss of water and solvents in a film causes:

1st—**Brittleness,** which leads to deterioration as it increases the danger of damaging the film by breaks during handling and projection.

2nd—**Shrinkage,** which results in serious projecting troubles such as scratches, breaking of perforation holes and finally making projection impossible due to a constant loss of the bottom loop.

A processed film which has shrunk due to loss of water and solvent can be restored by artificially adding humidity and solvents. Addition of the latter would, however, necessitate special machinery not accessible to the amateur. Adding humidity could be either done by the rather slow process of putting this film in a humidor or by asking a finishing plant to have the film re-soaked in water. In this case addition of 2 per cent glycerine to the water tank is advisable, as this slows down the evaporation of humidity after the film is dried.

However, the replacing of the proper humidity content will be of no value in case the decomposition has already reached a point where a relatively large amount of solvent has left the base. This film will stay brittle and the shrinkage can not be corrected to a sufficient degree.

For these reasons proper care of the film from the beginning is not only better but the only way to guarantee long lasting projection life. This care consists of putting the roll in a humidor can and watching closely that the atmospheric humidity in the can is always sufficiently high due to constantly remoistening of the filter paper at the bottom of the can and keeping the can itself stored in a cool place (not ice box!) To insure that the filter paper will keep its moisture as long as possible it is even better to use mixtures of water with glycerine, eucalyptus oil, and spirits of camphor. These ingredients can be purchased already mixed from any good photographic dealer. Also it requires less

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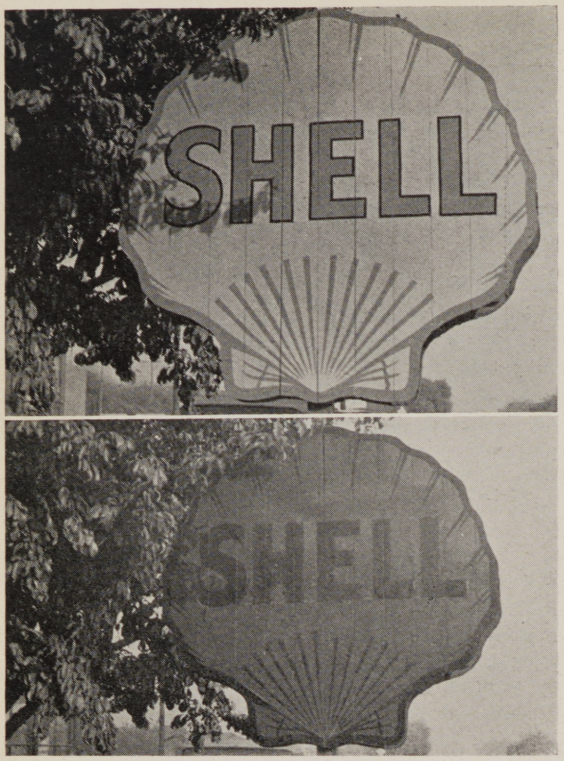
The humidor can is an important item in the equipment of the amateur. At the left is shown one of these containers. Note the perforations in the bottom of the container in which the humidor pad is contained. This photo is through the courtesy of Bell & Howell Company.



Showing the difference in super sensitive and orthochromatic film. The sign has a yellow background with red letters and red trim. Top photo shows result with supersensitive panchromatic plate, bottom with orthochromatic plate. We give this to indicate that it is not well to use ortho on colors in which red or yellow predominates, nor is it well to use it late afternoon when sunlight becomes very yellow. Satisfactory results, however, are possible where good sunlight prevails.

What Is Normal?

by

Karl Hale

THE depression has brought back the orthochromatic film in no mean measure. No less than a half dozen organizations under various brand names are marketing this type of 16mm reversal film for the use of the amateur.

In view of this fact it behooves us to study this type of film a bit in comparison to the faster products which have been used so consistently by the cinephotographer.

The manufacturers of this product are very frank in their statements that this film is not so fast as the panchromatic or supersensitive types of film. The reason for this, of course, is the fact that they are not so sensitive to the greens and reds as are the two favorite films.

Orthochromatic film should be watched carefully by the amateur user, not that there is anything particularly lacking in any type of this film, but its emulsion base will control its speed.

We find several different types on the market, ranging from a normal of F.8 to a normal of F.3.5.

Let's first analyze the normal of the different types of film.

We take these normals as we find them out here in California.

Supersensitive both of the Afga and Eastman type, as well as the Dupont negative, has a normal of F.16. ..Panchromatic in these three brands has a normal of F.11. Also we know that these two types of film are much faster in the early day and late afternoon, with, of course, supersensitive ranging very high in speed in comparison to panchromatic.

As the day grows later, or early in the morning, the light is tinged more with yellow. As we know yellow is made up of green and red and these two types of film being sensitive to these two colors makes them faster than orthochromatic which has its strong color value in the blue.

While, some may argue, the subject they are shooting does not possess either red or green, still those colors you are shooting still reflect strongly the lights that are cast on them. In fact if you will refer to the Eastman book on color you will find that the reason any article is of a certain color is because it is reflecting on that color from the spectrum and absorbing the other colors, so if the light that is being cast is strong in the yellow, no matter what the color of the object you are photographing might be, there will be a stronger tendency for that article to throw off green or red, depending upon its basic color.

As a proof of this, you will always find that when a woman wishes to match colors she will not do it under artificial light but will walk to the door of the store and make her color comparison in the daylight.

The artificial light throws off a great deal of yellow, and depending upon the colors used in the mixture of the articles to be compared it will be very difficult to compare the colors under this artificial yellow light.

While we speak of the types of film other than panchromatic as orthochromatic, we must correct ourselves in a measure and merely cite them as having the speed of orthochromatic. Some of these films are based on the emulsions which were designed for sound negative, some on the emulsions which were made for positive film.

Such films as Pellex and Kino-lux have a normal of F.8 for normal outdoor scenes. This is about one stop slower than panchromatic. However, the manufacturers of these products do not recommend them for interior use, nor do they strongly recommend the use of filters.

The reason for this is that these films, while highly satisfactory for ordinary shooting when the sun is shining and will give you good contrasts, are not sensitive in the red band of the spectrum and therefore to attempt to use one of the yellow, orange or red filters you are holding back the blue and endeavoring to photograph on a very small portion of the sensitive band of the film.

We say satisfactory results can be secured with these types of film, but one should not expect to secure the contrasts in tones that the more expensive film gives. The marketers of this film frankly admit that it is of the orthochromatic speed and it behooves the cinephotographer to carefully follow the directions contained in the boxes.

Then there is the slower film which will have a normal of f:5.6 or a normal of f:3.5. ..These films you will usu-

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Mysteries of Trick Photography

by

George J. Lancaster, A. S. C.

EVERY day questions are asked how are the tricks and effects accomplished photographically in the professional motion picture.

Comparing the motion picture of today with motion pictures as I first knew them, one cannot help being struck with the old time methods that were then applied to photography. The cameras, lenses and film used then are now rendered obsolete by the onrush of time.

Until a short while ago a sixteen millimeter camera had its limitations. The new 16 mm. models have incorporated many features identical with those that studio cameras provide. There's a reflex finder which shows on a ground glass screen the field of the taking lens, permitting visual focusing with all lenses, variable speed control from 8 to 64 frames per second, variable shutter for fades and lap dissolves, double lens turret, one to eight frame shaft for hand cranking, enabling the photographer to wind back the exposed film for lap dissolves and double exposures and split screen work.

With all these professional appliances, the 16 mm. enthusiast can apply the same technique in his films that is so often seen in a theatre presentation. With a little study and thought he can work out some of the effects. With this thought in mind the editor of the American Cinematographer asked me to unfold some of the tricks from the mystery bag, which I will try to explain in detail as clearly as possible.

Starting with the simple effects and gradually working into the more complicated operations, I shall begin with the fade in and fade out. On the crank handle side of the camera there is a lever that opens and closes the eclipse of the shutter. By moving the lever slowly to close position the scene fades out. With the shutter still closed you may then move to a different location. Start the film in motion, open the shutter, the scene fades in. Long fades denote lapse of time, short fades indicate transition of scenes. Lap exposures also denote transition of scenes and are produced as fade ins, and fade outs are made the same excepting that at the beginning of the fade out the operator must note the exact amount of footage exposed. With the shutter in closed position the operator rewinds the amount of film exposed. Set the camera in the new location, or maybe it is desired to move up from a long shot to a medium or a close-up of the same scene. Start motor and fade in, making sure to fade in on the same amount of film that had been rewound. Never pan on a lap dissolve. You may want to add a little mystery in your film. Perhaps you want someone to appear in the scene and to vanish ghost-like. Say, for instance, Jack is sitting in his roadster. Title—"I wish Jane were here." She suddenly fades into the picture, sitting next to Jack; he registers surprise in seeing her there, when suddenly she vanishes as quickly as she came. Sounds hard and complicated. Follow closely, this is how it is done:

At top first scene photographed. Then camera is turned back and center scene photographed creating the lap at the bottom with the picture of course lapping into the center scene again of the boat.

The scene opens showing a medium close-up or a long shot, as you desire, of Jack sitting alone in a roadster, or any other location for that matter. The required footage exposed fade out, rewind the film. When the correct amount corresponding to the footage used in fading out the scene, with shutter still closed, set Jane next to Jack, start filming, fading in the scene. Precaution must be taken that Jack does not move during the fade in and out. When the scene is completely faded in inform the subject IN, so they may resume action. Now you want Jane to vanish. Re-

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Many Films Received For Cinematographic Competition

• Although the closing date for the receipt of entries in the AMERICAN CINEMATOGRAPHER'S 1933 Amateur Competition is more than a week off, the number of films already received would indicate a greater interest in this year's competition than in the 1932 Contest.

The wider recognition to be given in this competition because of the revised rules and the elimination of a first, second, third and fourth prize winner has undoubtedly caused more to compete for the honor which will be accorded to those acknowledged winners in the various classes.

While no money is involved in this competition it is believed by the cinephotographer that no greater honor could be accorded him than a recognition by the American Society of Cinematographers of his efforts in motion picture making.

The American Society of Cinematographers being a non-profit organization has instituted this annual competition through its magazine, the AMERICAN CINEMATOGRAPHER, purely to engender the ambition to create better photography and better pictures and to assist the amateur in his work.

The Cinematographers of the Hollywood studios are conceded the greatest cameramen of the entire world. They have launched the new styles in photography; they have created new methods and it is acknowledged that such things as back lighting was first brought forcefully to the attention of the photographers of the world through the motion picture.

These men are concentrating on photography every day in the year. They must devise new ways and means to secure effects; to give a photography that is in harmony with the story.

It is their keen interest in the art of photography that has prompted them to institute this annual competition for the amateur. And it is conceded that a recognition in this competition is the greatest honor any amateur can achieve.

Philadelphia Holds Contest

• The Cinema League of Philadelphia is conducting a 16mm film contest among the amateurs within a radius of seventy-five miles of that city.

This contest is broken up into two divisions. Division one includes pictures produced entirely by an individual and Division two includes pictures made by more than one person or clubs.

The contest will be judged by Eric M. Knight, Public Ledger cinema critic; C. E. Anderson, technical editor, The Camera; William M. Rittase, prominent Philadelphia photographer; J. Frank Copeland, noted artist, and A. R. Boyd, president of the Fox Theatre Corp.

The entrees are restricted to units of 400-foot reels and are to be sent to Cinema League of Philadelphia, Fifth Floor, Architects Building, 17th and Sansom Streets, Philadelphia.

The prizes for Division one will be: First Prize—The Eric M. Knight Trophy; Second Prize—The League Medal.

Prizes in Division two will be: First Prize—The Ellis Gimbel Cup; and Second Prize—The League Medal.

Rod To Steady Camera

• G. O. Russell of Panama City, Florida, has hit upon a simple device to steady his Eymo camera. As shown in the illustration this rod consists of seven-eighths inch metal four and one-half feet high mounted onto the bottom of the camera handle. According to Russell, this gives pictures with professional steadiness without the trouble of carrying a tripod around.

Oakland Nominates Officers

• The Greater Oakland Motion Picture Club at its recent meeting nominated members to be elected to its board of directors. Those nominated include Gene Ritzmann, Elton Fox, Harold Hock, W. G. Latimer, Edwin C. Rosenberg, Ben Randall, Ralph Fox, Frank Tiscornia, Carl Finch and E. G. Thompson.

Contest Winners

Winners of the AMERICAN CINEMATOGRAPHER'S 1933 Amateur Competition will be announced in the December issue. Indications are this year's contest will surpass that of last year in number of entries. Again practically the entire world is represented with many entries coming from across the Atlantic as well as the Pacific.

Amateur Book on Sound

• Designed for amateur consumption, the Pitman Publishing Corporation of New York have just published a book authored by Bernard Brown, B.Sc., under the title "Amateur Talking Pictures and Recording."

This book treats of the fundamentals of sound recording starting with Home Recording, giving Electrical Data, describing Home Recording Equipment, Talking Pictures, their development and principles. There is a chapter devoted to the essentials of Sound on Disc Equipment as well as other valuable data for the amateur who wishes to secure some of the basic principles of Sound in motion pictures.

The book contains more than 200 pages of editorial matter and illustrations and sells for $2.25.

Amateur Becomes Dealer

• Mr. D. Knegt, former secretary of the Amateur Club in Eindhoven, Holland, has established himself as a dealer in the Hague handling both 35 and 16 mm. products. Knegt will operate under the firm name of Nederlandsch Kinotechnisch Bedrijfsbureau. He is desirous of handling photographic materials made in America. The business address of Knegt is: Kraaienlaan 9, The Hague, Holland.

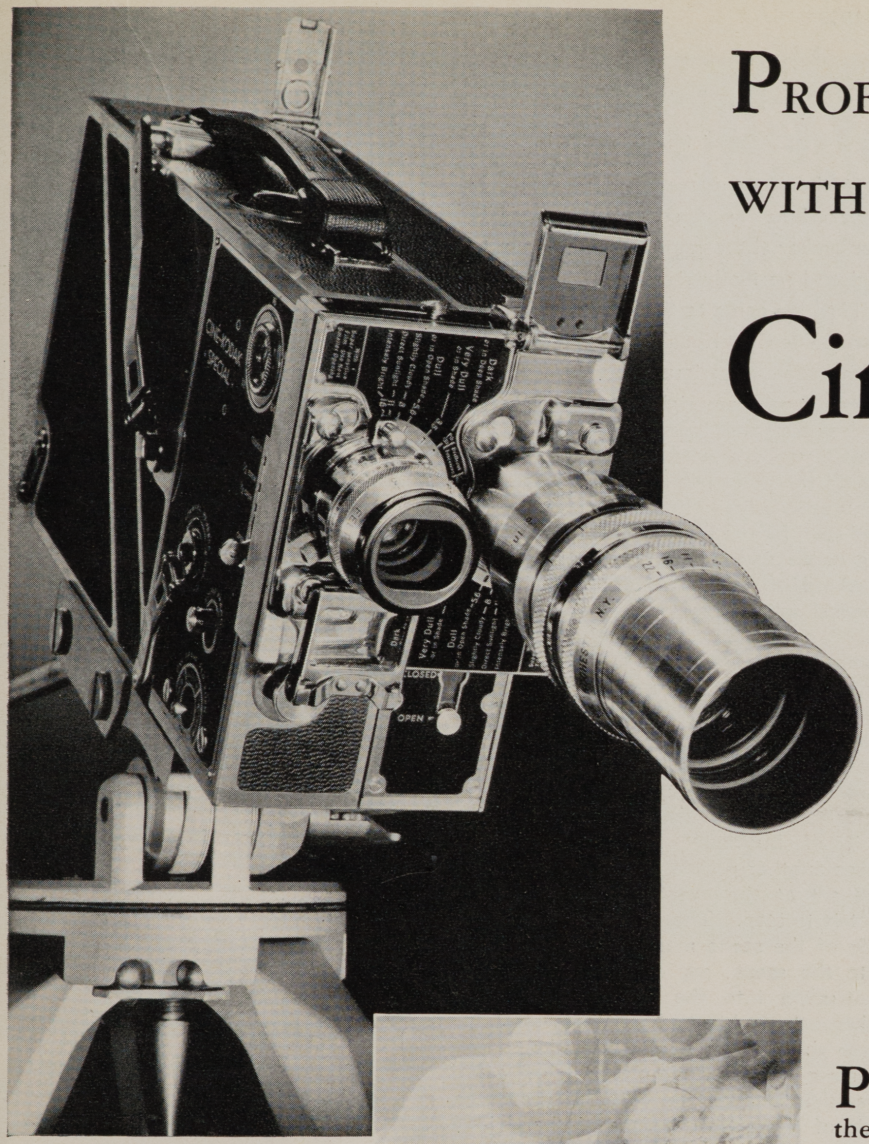
L. A. Cine Club Contest Closes

The annual contest which is conducted by the Los Angeles Cine Club will close in November for the year 1933.

The American Cinematographer's staff will act as the final judges for the club. In this list of judges there will also be several members of the American Society of Cinematographers.

The December meeting, at which the winners will be announced, will be under the sponsorship of the American Cinematographer, at which time it is expected that in addition to showing the pictures of the club prize winners, several of the winning pictures in the magazine's contest will also be presented.

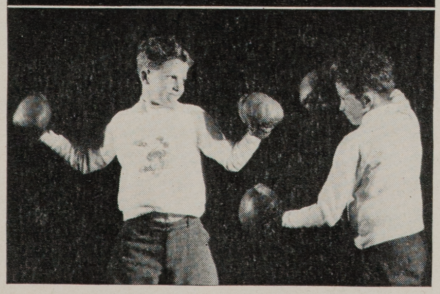
According to President Memory of this club, work on their club picture showing the construction of Boulder Dam is proceeding rapidly. Recently the entire club made a trip to the dam for production purposes.



PROFESSIONAL RANGE WITH 16 MM. ECONOMY

Ciné-Kodak *SPECIAL*

brings Hollywood technique to the making of your home movies



PROFESSIONALS and advanced amateurs alike acclaim Ciné-Kodak Special as the one 16 mm. camera of complete movie making scope... the one camera designed for the express purpose of freeing the ambitious picture taker from the restrictions of less versatile equipment and permitting screen effects impossible, or, at best, difficult to make in the past.

MANY EXCLUSIVE FEATURES

To mention but a few of the Special's unique advantages: it has a variable shutter for fades and dissolves, variable speed control—8 to 64 frames per second, two-lens turret head for six interchangeable lenses, reflex finder for ground glass focusing with all lenses, spring motor drive and hand cranks, single frame release for animation effects, set of six masks, interchangeable film chambers for switching from black-and-white film to Kodacolor.

The basic model of Ciné-Kodak Special is equipped with Kodak Anastigmat *f*.1.9 lens, double lens turret, one 100-foot film chamber, set of six masks. Cost, thus equipped, $375. Quotations on adaptations of this basic model will gladly be given and construction of the equipment executed on special order. For further details write for the Ciné-Kodak Special Book.

If it isn't an Eastman, it isn't a Kodak

FADES—DISSOLVES

To fade out and fade in with the Special you slowly close, then slowly open the variable shutter. When you wind back the film after the fade-out the same technique makes dissolves—shown at the right above.

MASK SHOTS

The Special's masks are slipped into a slot before the film. Circle, oval, two horizontal and two vertical half masks are supplied with the Special. Other designs are available on order.

DOUBLE EXPOSURES

With the use of the horizontal or vertical half masks and the winding back features, the same individual is easily made to appear twice in a scene.

EASTMAN KODAK COMPANY, *Rochester, New York*

Mysteries of Trick Photography

(Continued from Page 281)

peat the same operation fading out, rewind; Jane exits scene, and fade in. Remember the camera must be on a tripod and perfectly rigid.

Now we come to the split scene operation. The Cine Kodak Special is equipped with masks of various designs. The split screen masks are right and left vertical, and upper and lower horizontal. Perhaps you have witnessed a showing in which the actor portrayed two characters simultaneously in the same scene. You had seen him talking to his double, shaking hands and so forth. This is done by masking off half the aperture with the vertical split screen mask. "Line up the shot" as you desire, make positive the camera is absolutely rigid, with red chalk or black thread, divide the "set" in half corresponding to the edge or a little out frame of the mask. The subject may move in the defined limits of the open screen. Perhaps your script requires the actor to shake hands with himself. This "bit of business" requires rehearsals. Place another person on the mask side of the set at the exact position the subject is to stop. The person on the blank side of the scene merely places his hand into the scene, say about to the wrists protruding into the scene. The scene taken, the subjects hold their position, close the shutter, rewind the film to the starting point, change masks in the camera, then change the actor to the other side of the set, and place his hand into the scene, say about to the wrist. When the doubling business is done and the double exits scene—stop the camera, remove the mask, and resume filming the scene.

The upper and lower mask is used in many novel ways. Suppose you desire to introduce your cast, and you desire to present each individually on the screen, with their names at the foot of the screen. First have the title cards made for each of the characters. The lettering so arranged in the lower portion of the card so as to line up in the frame of the open portion of the lower screen. As you start "shooting" the title, note the footage exposed. Close the shutter, rewind the exposed film, remove the upper mask and insert the lower mask. Then line up the "shot" with the character in center frame medium close up. Open shutter and expose film corresponding to the title footage. You will have a nice credit title. You may work out many novel split screen "shots," and one may apply many novel effects to one's subject.

The stop motion appliance, adapted to this wonderful camera, affords the camera owner opportunities unheard of in the

16 mm. department. Various methods are applied to photographing animations, but the basic principle still exists. Volumes could be written on this subject alone. But I shall give the Cine Kodak Special cameraman a little action plot in stop motion to work out. Or, he may want to work out an idea he has long cherished. First I would suggest to those who do not know exactly the principle of motion as it is photographed, to study the action of a person walking or running in a print. You will note that each frame of film is an individual picture.

Now let's make a human interest story the plot of which is centered in little Betty Jane's nursery. Betty falls asleep; she dreams her little dolly and toy poodle dog come to life. The doll and dog walk across the room, climb up the chair and look over the crib rail. Having noted each individual movement in your reel of film just examined you can apply the same movement to dolly to create the illusion that she is actually walking. Place her in action. Photograph that pose in stop motion, then place her in the next movement, press the button for an exposure and so on. The finished print will show that dolly actually walks, as one sees in the popular cartoons. Each movement is a separate drawing; each drawing commands an individual exposure.

Suppose you desire to photograph a bud opening into full bloom. Set the camera, expose two or three frames, at 30-minute intervals until the bud is entirely open.

You may want the lettering of your titles to appear, as assembling, into sentences from a heap of letters at the foot of the title card. By placing each letter into a series of actions as described above, making individual exposures, the illusion created would be that the letters flew out of the pile into sequence.

Identical procedures may be applied to photographing titles, backgrounds, lap dissolves. All can be worked out with just a little planning ahead—such are the simple little tricks in the bag of mystery.

What IsNormal?

(Continued from Page 280)

ally find a bit cheaper than the faster products, but they have certain possibilities and are turned to by many because of their price.

It is natural because of their speed the period during the day in which they can be used is limited. The light must be good, the shadows not too deep.

The illustration accompanying this article is interesting from the standpoint of what supersensitive film will do in comparison to ortho when photographing colors. We have given this illustration so that the amateur can avoid such color schemes when he is using orthochromatic film, and also to show him in a measure

what happens when the light becomes too yellow.

While we realize this is an extreme illustration, still it brings out more clearly than we could describe in words the color rendition of these two types of motion picture film.

So in selecting your film for the pictures you intend to take bear in mind the color sensitivities of these different types of film. Or if you have the film, select your scenes and picture to conform with the film you are using.

How To Preserve Your 16mm Films

(Continued from Page 279)

frequent renewal of this combination than it does application of water to your humidor pad. Some claim that twice a year is sufficient to add this mixture to the humidor pad.

As the majority of 16mm film used is reversible it is strongly urged that duplicates be made before the original is scratched or damaged due to repeated projections. Then it will be possible to keep the original constantly under safe storing conditions and use it only when a new dupe is desired.

This is of special importance for films which undergo repeated projection, not only because the projection and handling of any roll of film always presents the danger of scratching, but also by reason of the fact that the heat of projection accelerates the shrinking process, so that over a period of time even safely stored film might become critically brittle and shrink from the influence of heat because of repeated projections.

Preparing the Scenario

(Continued from Page 278)

left. Wayne is in the lead and is holding out an ear of corn on a pole in front of the donkey. Both are having a hard time to make the animals keep moving. They go out of scene on the right—as they swing towards the camera. FADE OUT.

Scene 18—Long Shot.
FADE IN—Wayne and Chalk on donkeys come around a turn in the mountains—both wipe their brows—dismount—Wayne takes out the map. Wayne points one way—Chalk the other—Both argue as to which way the treasure is located. Suddenly Wayne sees the lone tree—points—both look from map to tree and back again—they run down bank and past camera to the left.

Scene 19—Medium Shot.
Wayne and Chalk run into the

picture from a distant point—entering to the right of scene—both run up to a lone tree in the foreground—they look for the arrow and circle mark Chalk spies it and points from the tree to the map.

Scene 20—Close Up.
Hand pointing to the tree on the map showing the arrow and circle.

Scene 21—(Same as Scene 19)
Both very happy as Wayne points to mark on the tree.

Scene 22—Close Up.
Hand points to the arrow and circle mark on the tree.

Scene 23—Wayne and Chalk shake hands—Wayne tells Chalk to go get the donkeys—Chalk goes out from the way he entered. Wayne looks at map and points.

Scene 24—Close Up.
Hand pointing to direction No. 1 on the map.

Scene 25—Wayne steps off twenty paces from the tree. Looks at the map.

Scene 26—Close Up.
Hand pointing to direction No. 2 on map.

Scene 27—(Same as Scene 25)
Wayne looks up from map—takes three steps to the side. Looks at the map.

Scene 28—Close Up.
Map showing hand pointing to direction No. 3.

Scene 29—(Same as Scene 27)
Wayne looks up from map—takes five steps backwards and falls down—slowly he rises and makes a big jump to the right. Chalk enters at this point leading the two donkeys—Wayne points to the spot where the map indicates the treasure is buried. Chalk takes a pick and shovel from the pack animals.

Scene 30—Semi-Close Up.
Chalk offers Wayne the pick and shovel—Wayne pushes it back to Chalk. They start thumbing the pick handle—Chalk wins—they make a pass at each other—Chalk laughs and points out the spot for Wayne to dig. Chalk sits down and reads the treasure map—Wayne starts to dig and throws the first shovelful of dirt on Chalk, who rises and makes a pass at Wayne. Chalk sits down again as Wayne starts to dig.

Scene 31—Medium Close Up.
FAST MOTION—Wayne digging. FADE OUT.

Scene 32—FADE IN—Semi-Close Up.
Two hours later Wayne is still digging in a hole waist deep. Chalk is sleeping. Wayne throws down the shovel—climbs out of the hole—gives Chalk a push awakening him Wayne grabs the map—tears it up and throws it at Chalk—who gives Wayne a push knocking him into the hole—Wayne stands up—wipes the dirt from his eyes—notices a corner of a box protruding from the side of the hole. Wayne motions to Chalk who jumps into the hole—both tug and finally get the box

loose—they throw it up on the bank.

Scene 33—Semi-Close Up.
Wayne and Chalk try to open the treasure box—Wayne takes the shovel and pries it open—both reach into the box.

Scene 34—Close Up.
Wayne and Chalk's hands examine the contents of the treasure box.

Scene 35—(Same as Scene 33)
Wayne and Chalk take an ancient flintlock—two powder horns—a pair of spurs—a sword—from the box one at a time and disgustedly throw them on the ground—they turn the box upside down, emptying it—both sit down and are very discouraged. Wayne's eye catches the sight of something on the ground—both dive for it.

Scene 36—Close Up.
Powder horn on the ground with gold pieces around it—Wayne's and Chalk's hands finger the gold pieces.

Self Photography with the 16mm

(Continued from Page 275)

off the picture angle so that neither one of us would walk out of the scene while the camera was doing its "robot" act.

I understand self-timing devices for still cameras are not a new thing, but to me Foster's gadget is the first one that has come to my attention for the motion picture 16mm camera. However, my research has not gone deeply into this matter. Still, to me the fact that a man should have built a contrivance such as this with the few tools possessed by Foster is something to marvel at. You see Foster is not a mechanic. He is in the insurance business and that certainly is a far cry from anything mechanical.

Birth of the News Reel

(Continued from Page 269)

that amazed the world even to this day—the great drive by the Marines.

High war adventures of photography go to Merle La Voy, a stalwart youth from the Minnesota woods. He went around the world with Ben Boyce as photographer for the Chicago Mail, in 1913. He was the only man ever to photograph the sacred Taj Mahal, and presented a copy to Woodrow Wilson. Later La Voy went to war, and was stationed in England. Some time later while trying to photograph the diplomats as they entered the headquarters he was arrested by the Scotland Yard men as a spy suspect. After a courtmartial he identified himself with credentials from the war depart-

ments in the United States and England. In return for this grave mistake an apology was offered and also a "break" cherished by the camera reporters stationed there—the exclusive permission to photograph the war diplomats as they entered and left No. 10 Downing Street, from the front window.

Outstanding among the adventures and daring displayed, none are equal to those of Arial Varges, Ace of Aces and in the service of the International News Reel. While overseas he had seen on the screen in Geneva movies of the modern sea wolf and German raider, Moewe. A thrilling camera record had been produced of the activities of this daring ship to serve as international propaganda to the German people, to uphold their spirits and courage. This picture had been sought by the foreign war lords and secret agents. Through unexplainable sources Varges got scent of the film in an obscure European capitol. He had always demonstrated considerable facility in doing things. In the meantime Great Britain put a ban on all Hearst International's stuff. Varges eluded all restrictions by becoming a captain in the British Army and was attached to the Intelligence and Photographic Corps. Now Captain Varges in the British uniform was bent on gaining possession of the film, which was now in the home of a secret agent. He met the fair agent through a renowned chauffeur, and after a wine supper and a display of gold, he gained what he went after.

One day in 1920 the diplomatic pouch was received at the British Consulate in New York. It included a considerable package under the seal of Captain Varges, and addressed to Edgar B. Hatrick, General Manager for the International News Reel, 228 William Street, New York City. The Moewe film had arrived.

In 1926-27, Emanuel Cohen and Al Richard left the Pathe Weekly, and organized the Paramount News with the editorial offices in the new Paramount Building, 544 West 43d Street. With Cohen went many of the Pathe ace men who were pioneers of the news game. Paramount News swept the world like a storm. It became at once successful photographically, pictorially and in news and make-up. His men trekked the world in golf shoes and knickers, in silk hats and stiff shirts, in gum boots and slickers. Far into the Labrador's icy snows and to the bottom of the earth. Another risked his life in the treacherous rapids and flows in the mighty Yukon. Such were the men on Cohen's staff.

There were war time adventures of daring photographed in 1918; as time went on new aces came. Outstanding among any news story pictured, one that won the Academy of Motion Picture Arts and Sciences award, was the Byrd Antarctic Expedition to the South Pole. Joseph T. Rucker and Willard Van Der

Ver were the two exceptional cinematographers picked by Cohen to bring back that immortal flight over the pole and the human interest side of the life spent in the Antarctic for two years.

And so we are nearing the end of this article. Just eighteen years after Pathe had produced the first news reel in the United States, a step further in the advancement of the motion pictures was borne into the industry. July, 1927, brought forth a new era and the realizations and dreams of those who experimented with talking pictures at last found permanent berth in the studios and field. The whole industry changed over night. Sound-proof stages were built for productions, new technical staffs were added to the various departments, new requirements had to be mastered by those directly engaged in the crafts.

The news reel took on a different aspect. And as sound came in the free lance and correspondent went out and silent pictures were catalogued as taboo.

A race to the screen from the ends of the earth has been run again, this time with sound truck and sound cameras lined up side by side, each company recording in sound and pictures the important news events of all the world.

As I look back while writing this, memories of the past recall the many pleasant days spent with the news cameramen who are fearless and resourceful, quick thinkers, brave and as tough as steel, but kind-hearted, always ready to help a brother in distress, and ready to deliver the very best that can be done, never failing nor flinching, ready to face death for a picture—such are the news hounds, the knights of the tripods.

Cinema Whaling in the Arctic

(Continued from Page 26)

Then, to go on, to photograph other scenes on our return trip down around the Aleutian Islands to the southern coast of Alaska, past Kodiak Island into the region of the glaciers, almost always photographing with adverse weather conditions, shooting scenes in the rain, of the faces of various glaciers falling, and yet another picture of a whale hunt; this time killing three more whales off Cape Omnaney, and now shooting with a Bell & Howell, mounted right in the whale boat. Through rip tides that almost threw us out of the boat, and the choppy seas, sending a heavy spray over the camera and the boat. This spray becoming even heavier when each whale, as it was caught would drag us through these big waves. Half-blinded by the spray we continually bailed out the half-filled boat, and through it all the camera registered each scene regularly.

When we finished with the cutting up scenes on board the "Nanuk" and director Rosson announced that our work was

finished, I am quite sure that everyone of us heaved a sigh of contentment and satisfaction, feeling that they had done their utmost in securing for their studios, a truly successful whaling picture.

Color Identifies Reels

• According to a plan in operation with some of the Distributing Companies of Germany it is now easy for the operator to determine the number of reel without unwinding the leader to look at the identification mark usually used.

The plan, which has been put into operation, is to have a different colored leader for each reel depending upon its number in the feature, but always retaining the same color of each reel; that is, reel number one may be red, reel number two, blue; number three, green; number four, amber; and number five, black. On opening a can the operator immediately knows the number of the reel by the color of the leader.

Digest of October S. M. P. E. Journal

• Among the several papers printed in the October issue of the Journal of the Society of Motion Picture Engineers is one by J. I. Crabtree on "Sound Film Printing."

This article deals with the production of sound-film prints from variable density negative by the Model D Bell & Howell printer. This study is from the point of view of high-frequency response and uniformity of product. Differences in frequency response are noted between prints made in different commercial laboratories. Individual prints in the majority of cases show variations in unmodulated track density and in the amplitude of wave envelope at high frequencies. The former are due chiefly to irregularities in the film drive and possibly to some extent to variations inherent in film.

The effect of simple mechanical filtering by the addition of a flywheel is discussed. High-frequency wave envelope irregularities result from momentary loss of contact at the printing aperture. The influence of threading, gate adjustment, printing speed, air pressure, type of illumination, degree of shrinkage, and variations in aperture height are discussed. The change in high-frequency response produced by modifications of mechanical parts do not cover the range of difference in loss characteristic is likely to be found in the developing operation.

Other papers deal with "Standardization," "Wave Form Analysis if Variable Width Sound Records" and "Military Training and Historical Films."

Hartman To Address S. M. P. E.

• At the annual business meeting to be held by the Pacific Coast Section of the Society of Motion Picture Engineers on November 7, William Hartman, West Coast representative of Carl Zeiss Company, will address that organization, giving them a description of the technical aspects of the Hollywood Planetarium now under construction.

At this meeting the annual election and induction of officers will also be held.

Akers Invents Camera

• According to reports Irving Akers, cameraman of Hollywood, has invented a 35mm camera that weighs only 12½ pounds when loaded.

According to the claim of Akers it is possible for the cinematographer to carry this camera about on his shoulder and at the same time look through the finder to keep the scene in view. The camera is said to be silenced and equipped for the recording of sound at the same time.

One of the other features pointed out by the inventor is the fact that it can be run by remote control. Because of its weight and flexibility it can be drawn up into the wings for angle shots. He also feels it will have value in airplane work.

Joseph Schneider Dies

• Joseph Schneider, founder of the lens factory of Joseph Schneider & Company, died on October 20, at the age of 79.

Mr. Schneider was a former citizen of Springfield, Ohio. On the occasion of his seventy-fifth birthday, he was especially honored by the city of Kreuznach, Germany, and made an honorary citizen by reason of his many benevolent acts in that city, all political parties joining in paying him tribute. It is rare indeed that a man is so honored by two countries.

Dan Clark Awaits "Blessed Event"

Somewhere on the Arizona desert Cinematographer Daniel B. Clark, A.S.C., and a sound crew are waiting for a lady horse to become a mother.

In fact, they're waiting for four lady horses to become mothers.

The script of Will James' famous story, "Smoky," following the text of the book to the letter, calls for scenes of a newborn black colt, and Cinematographer Clark is waiting for blessed events.

It will be necessary to photograph each colt within an hour after its birth, for the script calls for scenes showing one of the little fellows getting to his feet for the first time and taking his first steps.

He is shooting various preliminary scenes in the Sedona Basin, 40 miles from Flagstaff, but at the moment the veterinary gives the signal it will be relayed quickly to Clark, who will promptly hot-foot it to whatever part of the open range happens to be "set."

He has four chances to get the all-important shot, and he earnestly hopes at least one of the "youngsters" arrives in daylight.

P. S.—Clark has returned. The colts arrived at night while the Vet was away at another birthday party. Alas and alack!

Canadian Business Better

• According to reports from Canada, the motion picture business has shown an increase of 15 per cent in theatre attendance in the Toronto district in September and October, 1933, compared with the same months of 1932. For Ontario, Quebec and the Maritime provinces, the increase is said to have averaged 12 per cent. This is due to greater trade and industrial activity, augmented payrolls and lessened unemployment.

DIRECTORY of DEALERS

Handling the American Cinematographer

ARIZONA

Phoenix: Studio of Sound, P. O. Box 1671.
Tucson: William M. Dennis, 22 United Bank Bldg.
Nogales: A. W. Lohn, 309 Morley Ave.

ARKANSAS

Judsonia: Lee's Novelty House.

CALIFORNIA

Berkeley: Berkeley Commercial Photo Co., 2515 Bancroft Way.
Hinks, Kamrkorner, Shattuck and Kittredge.
Beverly Hills: Bob Robinson Home Movies, 417 N. Beverly Drive.
Fresno: Potter Drug Co., 1112 Fulton Ave.
Glendale: Kug Art Photo Service, 205 So. Brand Blvd.
A. L. Kirkhuff, 148 S. Brand Blvd.
Hollywood: Bell & Howell Co., 716 North La-Brea Ave.
Educational Projecto Film Co., 1611 North Cahuenga Blvd.
Hollywood Camera Exchange, Ltd., 1600 N. Cahuenga Blvd.
Hollywood Citizen, 6366 Hollywood Blvd.
Hollywood Movie Supply Co., 6038 Sunset Blvd.
J. V. Merchant, 6331 Hollywood Blvd.
Morgan Camera Shop, 6305 Sunset Blvd.
Universal News Agency, 1655 Las Palmas.
Los Angeles: California Camera Hospital, 321 O. T. Johnson Bldg.
Eastman Kodak Stores, Inc., 643 So. Hill Street.
T. Iwata Art Store, 256 East First St.
Lehnkering Pharmacy, 1501 N. Western Ave.
B. B. Nichols, 731 South Hope St.
Tappenbeck & Culver, 10958 Weyburn Ave., Westwood Village.
Victor Animatograph Corp., 650 So. Grand Ave.
Wilshire Personal Movies, 3150 Wilshire Blvd.
Monrovia: Cliff's Photo Art Shop.
North Hollywood: Studio City Pharmacy, 12051 Ventura Blvd.
Oakland: Adams & Co., 380 14th St.
Eastman Kodak Stores, Inc., 1918 Broadway.
Pasadena: The Flag Studio, 59 East Colorado St.
Richard Fromme, 965 S. Fair Oaks.
A. C. Vroman, 329 East Colorado St.
Richmond: La Moine Drug Co., 900 Macdonald Ave.
Sacramento: Frank McDougal, 1017 10th St.
San Bernardino: Steele's Photo Service, 370 D Street.
San Diego: Harold E. Lutes, 958 Fifth St.
Ace Drug Co., 820 W. Washington St.
Eastman Kodak Stores, Inc., 419 Broadway.
San Francisco: Eastman Kodak Stores, Inc., 216 Post St.
Hirsch & Kaye, 239 Grant Ave.
San Francisco Camera Exchange, 88 Third St.
Schwabacher-Frey Stationery Co., 735 Market St.
Sherman, Clay & Co., Kearny & Sutter Sts.
Trainer-Parsons Optical Co., 228 Post Street.
San Jose: Webb's Photo Supply Store, 66 So. First St.
San Rafael: Webb & Rogers, 4th & B Sts.
Santa Barbara: J. Walter Collinge, 1127 State St.
The Camera Shop, 800 State St.
Faulding's, 623 State St.
Stockton: The Holden Drug Co., Weber Ave. & Sutter St.
Logan Studios, 20 N. San Joaquin St.

COLORADO

Denver: Eastman Kodak Stores, Inc., 626 Sixteenth St.
The May Co., 16th & Champa Sts.

CONNECTICUT

Bridgeport: Harvey & Lewis Co., 1148 Main St.
Danbury: Heim's Music Store, Inc., 221 Main Street.
Hartford: The D. G. Stoughton Co., 1255 S. Whitney St.
Watkins Bros., 241 Asylum St.
Meriden: Broderick & Curtin, 42 E. Main St.
Middletown: F. B. Fountain Co., 483 Main St.
New Haven: Eugene F. Clark Book Shop, 343 Elm St.
Norwich: Cranston Co., 25 Broadway.
Waterbury: Curtis Art Co., 65 W. Main St.

DELAWARE

New Castle: E. Challenger & Son.
Wilmington: Butler's, Inc., 415 Market St.
Wilmington Elec. Spec. Co., Inc., 405 Delaware Ave.

DISTRICT OF COLUMBIA

Washington: Columbia Photo Supply Co., Inc., 1424 New York Ave., N. W.
Eastman Kodak Stores, Inc., 607 14th St., N. W.
Robbins, National Press Bldg., 529 14th St., N. W.

FLORIDA

Clearwater: Courtesy Cigar Store, Post Office Arcade.
Jacksonville: Eastman Kodak Stores, Inc., 129 W. Adams St.
Miami: Miami Photo Supply Co., 31 S. E. First Ave.
St. Petersburg: Robinson's Camera Shop, 410 Central Ave.
Tampa: Burgert Bros., Inc., 608 Madison St.

GEORGIA

Atlanta: Eastman Kodak Stores, Inc., 183 Peachtree St.

IDAHO

Boise: Ballou-Latimer Co., 9th & Idaho.

ILLINOIS

Bloomington: Hawkins Studio, 214 W. Washington.
Chicago: Almer, Coe & Co., 105 N. Wabash Ave.
Associated Film Libraries, Inc., Suite 224, 190 N. State St.
Bass Camera Co., 179 West Madison St.
Central Camera Co., 230 S. Wabash Ave.
Eastman Kodak Stores, Inc., 133 N. Wabash Ave.
Fair, The, Camera Dept., 7th Floor, State-Adams-Dearborn Sts.
Lake Shore Radio Co., 3204-6 Broadway.
Lyon & Healy, Inc., Wabash Ave. at Jackson Blvd.
Stanley Warren Co., 918 Irving Park Blvd.
Norman Willets Co., 318 W. Washington St.
Wolk Camera Co., 201 S. Dearborn St.
Evanston: Almer, Coe & Co., 1645 Orrington Ave.
Hattstrom & Sanders, Inc., 702 Church St.
Galesburg: Illinois Camera Shop, 84 So. Prairie St.
Moline: Seaholms Kodak Co., 1507 Fifth Ave.
Rockford: Johnson Photo Shop, 316 E. State St.
Springfield: Camera Shop, The, 320 S. Fifth St.

INDIANA

Evansville: Smith & Butterfield, 310 Main St.
Fort Wayne: The Howard Co., Inc., 112 W. Wayne St.
Sunny Schick, 401 W. Washington Blvd.
Indianapolis: L. S. Ayers & Co., Dept. 290, 1 West Washington St.
South Bend: Ault Camera Shop, 122 S. Main St.
Terre Haute: Snyder's Art Store, 21 S. 7th St.

IOWA

Cedar Rapids: Camera Shop, 220 Third Ave.
Davenport: Eastman Kodak Stores, Inc., 318 Brady St.
Des Moines: Eastman Kodak Stores, Inc., 808 Locust St.
Iowa City: Rexall & Kodak Store, 124 E. College St.
Sioux City: Lynn's Photo Finishing, Inc., 419 Pierce St.
Eastman Kodak Stores, Inc., 608 Pierce St.
Waterloo: Mack's Photo Shop.

KANSAS

Topeka: Hall Stationery Co., 623 Kansas Ave.
Wichita: Jack Lewis Film Service, 329 Sedgwick Building.
Lawrence Photo Supply, 149 N. Lawrence Ave.

KENTUCKY

Lexington: W. W. Still, 129 W. Short St.
Louisville: A. L. Bollinger Drug Co., Stilz & Frankfort Ave.
Sutcliffe Co., 225 S. 4th Ave.

LOUISIANA

Alexandria: The Newcomb Studios, 324 Johnston.
Monroe: Griffin Studios, P. O. Box 681.
New Orleans: Eastman Kodak Stores, Inc., 213 Baronne St.

MAINE

Auburn: Wells Sporting Goods Co., 52-54 Court St.
Portland: Bicknell Photo Service, 43 Exchange St.

MARYLAND

Baltimore: Eastman Kodak Stores, Inc., 309 N. Charles St.
Stark-Films, 219 W. Centre St.
Zepp Photo Supply Co., 3044 Greenmount Ave.
Hagerstown: R. M. Hays & Bros., 2830 W. Washington St.

MASSACHUSETTS

Boston: Eastman Kodak Stores, Inc., 38 Bromfield St.
Boston Camera Exchange, 44 Bromfield St.
Cinecraft Co., of New England, 80 Boylston St.
Ralph Harris Co., 30 Bromfield St.
Iver Johnson Sporting Goods Co., 155 Washington St.
Andrew J. Lloyd Co., 300 Washington St.
Pathescope Co. of the N. E., Inc., 438 Stuart St.
Pinkham & Smith Co., 15 Bromfield St.
Stillfilm Sales Co., 40 Stuart St.
Braintree: Alves Photo Shop, 349 Washington St.
Cambridge: E. M. F. Electrical Supply Co., 430 Massachusetts Ave.
Lowell: Donaldson's, 75 Merrimack St.
Lynn: Moehring's, Inc., 490 Washington St.
New Bedford: J. Arnold Wright, 7 S. Sixth St.
Newtonville: Newton Photo Shop, 92 Bower St.
Pittsfield: E. C. Kilian, 411 North St.
Salem: Pitman Movie Service, 45 Summit Ave.
Springfield: Harvey & Lewis Co., 1503 Main St.
J. E. Cheney & Co., Inc., 301 Bridge St.
Worcester: Harvey & Lewis Co., 513 Main St.

MICHIGAN

Detroit: Crowley, Milner & Co.
Clark Cine-Service, Rooms 203-204 Professional Bldg., 10 Peterboro.
Detroit Camera Shop, 424 Grand River W.
Eastman Kodak Stores, Inc., 1235 Washington Blvd.
H. C. Film Service, 12191 Ilene Ave.
J. L. Hudson Co., Dept. 290.
E. B. Meyrowitz, Inc., 1516 Washington Blvd.
Flint: Gardner Photo Service.
Grand Rapids: Camera Shop Stores, Inc., 56 Monroe Ave.
Photo Service Shop, 44 Monroe Ave.
Jackson: Royal Film Service, 125 Michigan Ave. W.

(Continued on Page 296)

Recent Patents Pertaining to Motion Pictures

September 12, 1933

1,926,255. Subtractive Color Photography. Joseph A. Ball, Los Angeles, Calif., assignor, by mesne assignments, to Technicolor, Inc., New York, N. Y. The method of making color photographs which comprises making three color separation negatives of different spectral ranges of a scene, making a black and white positive key print from the color negative of the intermediate spectral range and superimposing thereon positives of the color separation negatives in colors complementary to the respective taking ranges.

1,926,406. System for Recording Impulses. Frank Rieber, Berkeley, Calif., assignor, by mesne assignments, to Sound Laboratory Corporation, Ltd. Means for recording varying electric potentials on a sensitized surface, comprising means creating a recording electrostatic field acting on gas adjacent said surface over a limited portion thereof, and means for producing a guarding field surrounding said electrostatic field, of an intensity insufficient to affect the surface.

1,926,584. Photographic Transforming Apparatus. Leon T. Eliel, Los Angeles, Calif. A method of forming a unitary photographic image on a printing medium from a plurality of disjoined images appearing on a single film, said images being obliquely photographed at equal angles, which method includes the steps of: mounting said film and said printing medium at an angle equal to the angle of obliquity of said photographed images; and successively projecting said disjointed images onto said printing medium in matching relationship, the angle between the planes of said film and printing medium being maintained constant for each projection.

1,926,722. Composite Motion Picture. Fred W. Jackman, Beverly Hills, Calif., assignor to Warner Bros. Pictures, Inc., New York, N. Y. The method which comprises photographing action illuminated with light of a selected color before a background of a substantially complementary color, through a photo-

(Continued from Page 294)

Lansing: Linn Camera Shop, 109 S. Washington Ave.
Saginaw: Heavenrich Bros. & Co., 301 Genesee.

MINNESOTA

Duluth: Eastman Kodak Stores, Inc., 3 W. Superior St.
LeRoy: Ivan E. Meyers, Home Movie Service, 215 W. Main St.
Minneapolis: Eastman Kodak Stores, 112-116 So. Fifth St.
Gospeter's Blue Front, 1006 Nicollet Ave.
National Camera Exchange, 5 South Fifth St.
Owatonna: B. W. Johnson Gift Shop, 130 W. Bridge St.
St. Paul: Eastman Kodak Stores, Inc., Kodak Bldg., 91 E. Sixth St.
H. W. Fisher Photographic Supplies, 381 Minnesota St.

MISSOURI

Kansas City: Eastman Kodak Stores, Inc., 916 Grand Ave.
F. O. Calvin Co., B. M. A. Building, Union Station Plaza.
Eastman Kodak Stores, Inc., 19 E. 11th St.
Hanley's Photo Shop, 116 E. 12th St.
St. Louis: Eastman Kodak Stores, Inc., 1009 Olive St.
Famous-Barr Co., M. P. Dept. 6th & Olive St.
Geo. D. Fisher & Co., 915 Locust St.

MONTANA

Billings: Midland Drug Co., 23 N. 27th St.
Bozeman: Alexander Art Co.

NEBRASKA

Lincoln: Eastman Kodak Stores, Inc., 1217 O St.
Eastman Kodak Stores, Inc., 419 S. 16th St.
Omaha: J. G. Kretschmer & Co., 1617 Harney St.

NEW HAMPSHIRE

Lebanon: Photocraft Co.
Newport: K. E. Waldron, 1 A Main St.

NEW JERSEY

Atlantic City: Eastman Kodak Stores, Inc., 1735 Broadwalk.
Bayonne: Milton Mendelwager, 192 Ave. B.
Cliffside Park: Louis C. Ghiosay, 639 Anderson Ave.
East Orange: Edmund J. Farlie Jr., 45 N. 19th St.
Hawthorne: Hawthorne Home Movie Service, 52 MacFarlan Ave.
Irvington: Wolf Bros., 1340 Springfield Ave.
Jersey City: Levy's Sport Shop, 149 Monticello Ave.
Montclair: Edward Madison Co., 42 Bloomfield Ave.
Newark: Anspach Bros., 838 Broad St.
Paterson: Robt. G. Smith, 40 Hamilton St.
Sykes Drug Store, 179 Market St.
Summit: Eastman Bookshop, 380 Springfield Ave.
Trenton: Howard E. Thompson, 35 Newkirk Ave.
Union City: Heraco Exchange, Inc., 611 Bergenline Ave.
West New York: Rembrandt Studios, Inc., 526A Bergenline Ave.

NEW MEXICO

Santa Fe: Capital Pharmacy, Inc.

NEW YORK

Albany: Albany Photo Supply Co., Inc., 204 Washington Ave.
Binghamton: A. S. Bump Co., Inc., 180 Washington St.
Brooklyn: Geo. J. McFadden, Inc., 202 Flatbush Ave.
Abraham & Straus, Inc., Fulton & Hoyt Sts.
J. Navilio, 1757 Broadway.
Buffalo: Buffalo Photo Material Co., 37 Niagra St.
Hauser Bob Studio, 11 West Tupper St.
J. F. Adams, Inc., 459 Washington St.
Nowak Optical Co.
United Projector & Film Corp., 228 Franklin St.
Goshen: T. H. Finan.
Haverstraw: E. H. Vandenburgh, 3 Broadway.
Hempstead: Agnew's, 47 Main St.
Islip, H. L. Terry & Sons.
Ithaca: Henry R. Head, 109 N. Aurora St.
Long Island City: Leonard F. Kleinfield, 4202 Queen's Blvd.
New Rochelle: Artist's Photo Service, 219 Hugenot St.
New York City: Wm. C. Cullen, 12 Maiden Lane.
Adam Archinal Corp., 305 W. 56th St.
Ambercrombie & Fitch, 45th & Madison Ave.
Bloomingdale's 59th & Lexington Ave.
J. H. Boozer, 145 E. 60th St.
Columbus Photo Supply Co., 146 Columbus Ave.
Abe Cohen's Exchange, 120 Fulton St.
Davega, Inc., 111 East 42nd St.
Davega, Inc., Empire State Building.
Eastman Kodak Stores, Inc., 356 Madison Ave. at 45th St.
Fotoshop, Inc., 136 W. 32nd St.
H. & D. Folsom Arms Co., 314 Broadway.
Gall & Lembke, Inc., 7 East 48th St.
Gillette Camera Stores, Inc., 117 Park Ave.
Gimbel Bros., Dept. 575, 33rd St. & Broadway.
Joseph P. Hackel, 1919 Chanin Bldg., 122 E. 42nd St.
Harry's Camera Exchange, 317 W. 50th St.
Hecker's Camera Store, 1519 Amsterdam Ave.
Herbert & Huesgen Co., 18 E. 42nd St.
Lugene, Inc., 600 Madison Ave., between 57th & 58th.
Luma Camera Service, Inc., 302 W. 34th St.
Mogull Bros. Electric Corp., 1944 Boston Road, Bronx.
Newman's Camera Shop, 1197 Sixth Ave.
New York Camera Exchange, 109 Fulton St.
Pago, Inc., 1095 Sixth Ave.
Pickup & Brown, 368 Lexington Ave.
Rab Sons, 1373 Sixth Ave.
Schoenig & Co., Inc., 8 East 42nd St.
Sibley, Lindsay & Curr Co.
Frank Tanham & Co., Inc., 9 Church St.
Times Building News Stand, Inc., Times Building.
Willoughby's, 110-112-114 West 32nd St.
Richmond Hill: Josephson Bros., 10902 Jamaica Ave.
Rochester: Marks & Fuller, Inc., 36 East Ave.
Smith, Surrey, Inc., 129 Clinton Ave., South.
Rome: Fitchard Studio, 133-135 W. Liberty St.
Schenectady: J. T. & D. B. Lyon, 236 State St.
Syracuse: Geo. F. Lindemer, 443 S. Salina St.
Francis Hendricks Co., Inc., 339 So. Warren St.
Troy: A. M. Knowlson & Co., 350 Broadway St.
Utica: Edwin A. Hahn, 223-225 Columbia St.
Yonkers: W. J. Dolega, 242 Nepperham Ave.

NORTH CAROLINA

Charlotte: W. I. Van Ness & Co., 213 N. Tyron St.

OHIO

Akron: Pochrandt Photo Supply Co., 16 N. Howard St.
Canton: Ralph Young News Agency.
The Camera Shop, 531 Market Ave. N.
Cincinnati: Eastman Kodak Stores, Inc., 27 West Fourth St.
Huber Art Co., 124 Seventh St., W.
John L. Huber Camera Shop, 416½ Main St.
L. M. Prince Co., 108 W. Fourth St.
Cleveland: The Home Movies, Inc., 2025 Euclid Ave.
Dodd Co., 652 Huron Road.
Eastman Kodak Stores, Inc., 806 Huron Road, 1862 E. 6th St., 1915 E. 9th St., Union Trust Bldg.
Escar Motion Picture Service, Inc., 10008 Carneigie Ave.
Halle Bros. Co., 1228 Euclid Ave.
Higbee Co., 90 Public Square.
Columbus: Capitol Camera Co., 7 E. Gay St.
Columbus Photo Supply, 62 E. Gay St.
Home Movies Co., 234 S. High St.
Don McAllister Camera Co., 73 E. State St
Dayton: Dayton Camera Shop, 1 Third St., Arcade.
Middletown: Lee R. Chamberlain, care Roy A. White's Elec. Shop, 48 S. Broad St.
Portsmouth: V. E. Fowler, 824 Galia St.
Salem: Butcher's Studio, 166 South Broadway.
Steubenville: Beall & Steele Drug Co., 424 Market St.
Toledo: Gross Photo Supply Co., 325 Superior St.
Franklin Print & Eng. Co., 226-36 Huron St.
Youngstown: Eastman Kodak Stores, Inc., 7 Wick Ave.
A. C. Saunders, 177 Benita Ave.
Zanesville: Zulandt's Drug Store, Widney, cor. Seventh & Main.

OKLAHOMA

Oklahoma City: H. O. Davis, 522 N. Broadway.
Tulsa: Camera Shoppe, Inc., and the Charles High Productions, 1213 S. Boulder Ave.

OREGON

Lakeview: Getty's Photo Studio, I.O.O.F. Bldg., Center & Main Sts.
Marshfield: Mel's News Stand, cor. Broadway & Anderson.
Pendleton: J. T. Snelson, 608 Gardner St.
Portland: Eastman Kodak Stores, Inc., 345 Washington St.
Lipman-Wolfe & Co., Kodak Dept., Fifth, Washington & Adler Sts.
Meier & Frank Co., Kodak Dept., Fifth, Sixth, Morrison & Alder Sts.

PENNSYLVANIA

Allentown: M. S. Young & Co., 736-40 Hamilton St.
Easton: Easton Sporting Goods Co., 2nd and Northhampton St.
Erie: Kelly Studios, 1026-28 Peach St.
Harrisburg: James Left Co., 225 N. 2nd St.
Johnstown: Johnstown News Co., 115 Market St.
Lancaster: Pugh's Art Shoppe, 33 W. King St.
Langhorne: National Entertainment Service, 360 Bellevue Ave.
Lebanon: Harpel's, 757-9 Cumberland St.
Philadelphia: Klein & Goodman, 18 South 10th St.
Camera Shop, 51 N. 52nd St.
G. P. Darrow Co., Inc., 5623-5 Germantown Ave.
Eastman Kodak Stores, Inc., 1020 Chestnut St.
Home Movies Studios, 20th & Chestnut Sts.
MacCallum Stores, 1600 Sansom St.
M. & H. Sporting Goods Co., 512 Market St.
Newsreel Laboratory, 1707 Sansom St.
Strawbridge & Clothier, Dept. 201, Market, Eighth & Filbert Sts.
George W. Tegan, 420 E. Mt. Airy Ave.
John Wanamaker's Motion Picture Dept., No. 1 Broad St.
Williams, Brown & Earle, Inc., 918 Chestnut St.
Pittsburgh: Eastman Kodak Stores, Inc., 606 Wood St.
B. K. Elliott & Co., 126 - 6th St.
Joseph Horne Co., Magazine Dept.
Kaufmann Dept. Store, Inc., Dept. 62, Fifth Ave.
Reading: W. F. Drehs, 341 Court St.
Scranton: Houser's, 133 N. Main Ave.
Wallace & Cook, Inc., 2-5 N. Washington Ave.
Scranton Home Movies Library, 316 N. Washington Ave.
Shamokin: Jones Hardware Co., 115 E. Independence St.
Wilkes Barre: Ralph DeWitt, 2 South River St.
Windber: New Arts Feature, 508 - 15th St.
York: Swe'gart's Photo Service Shop, 278 W. Market St.

RHODE ISLAND

Pawtucket: Thomas N. Simpson, Broadway & Exchange St.
Providence: E. P. Anthony, Inc., 178 Angell St.
Starkweather & Willians, Inc., 47 Exchange Pl.
Westcott, Slade & Balcom Co., 95-99 Empire St.

TENNESSEE

Jackson: Southern Pictures Corp.
Knoxville: Jim Thompson Co., 415 W. Church St.
Memphis: Memphis Photo Supply Co., 122 Union Ave.
Nashville: Geo. C. Dury Co., 420 Union St.

TEXAS

Abilene: W. C. Cosby, 249 Pine St.
Dallas: Jamieson Film Laboratories, 2212 Live Oak St.
E G. Marlow Co., 1610 Main St.
Fort Worth: The Camera Shop, Inc., 133 W. Sixth St.
Chas. G. Lord Optical Co., 704 Main St.
Houston: Star Elec. & Eng. Co., Inc., 613 Fannin St.
San Antonio: Fox Co., 209 Almo Plaza.

UTAH

Salt Lake City: Eastman Kodak Stores, Inc., 315 S. Main St.

VIRGINIA

Norfolk: G. L. Hall Optical Co., 257 Granby St.
Richmond: G. L. Hall Optical Co., 418 E. Grace St.

VERMONT

Burlington: G. W. La Pierre's, 71 Church St.

WASHINGTON

Bellingham: Clyde Banks, 119 W. Holly St.

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graph transparency having clear high lights and having the shades and shadows therein dyed substantially the color of said light.

1,926,887. Sound Recording System. Harold C. Silent and Ray R. Scoville, Los Angeles, Calif., assignors to Electrical Research Products, Inc., New York, N. Y. In a system for recording modulated currents on a sensitive material comprising a beam of recording flux affecting said sensitive material, a recording device actuated by said currents to modulate said flux and a biasing circuit to vary the mean value of said flux, the method of adjustment which comprises applying modulated currents to said recording device of such amplitude as to produce substantially complete modulation of the normal value of said flux, reducing the input of modulated currents applied to said recording device to a predetermined fraction of said first value, and adjusting said bias to reduce said flux to a mean value which is substantially completely modulated by said reduced input of modulated currents.

September 19, 1933

1,927,284. Film Cleaning Device. Albert S. Howell, Chicago, Ill., assignor to The Bell & Howell Company, Chicago, Ill. In a film cleaning device the combination with a pair of body members connected for relative movement, of means normally maintaining said body members in adjacent relation, opposing pressure members on respective of said body members, film cleaning strips on respective of said body members and overlying said pressure members and adapted to engage opposite sides of a film when said body members are in adjacent relation and to separate when said body members are out of adjacent relation, and means for bringing successive portions of said strips into film contacting position including an enclosure on one of said body members carrying the unused portion of one of said strips and having an exterior arcuate surface over which said strip passes to cleaning position, said strip on said arcuate surface forming a bight forming guide for a film being cleaned.

September 26, 1933

1,928,434. Automatic Clutch Trip for Film Drives. Roy J. Pomeroy and Carl V. Olson, Los Angeles, Calif.; said Olson assignor to Paramount Publix Corporation, Los Angeles, Calif. An attachment for a motion picture camera having an operating shaft and a feed and take-up mechanism, said attachment embodying: a housing mounted on said camera adjacent said operating shaft; a clutch in said housing; a driving member in said clutch engaging said operating shaft; a driven member in said clutch adapted to be driven by a main drive shaft; and means including a swinging finger positioned in said camera adjacent said feed

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Pullman: Graves Studio.
Seattle: Anderson Supply Co., 111 Cherry St.
Eastman Kodak Stores, Inc., 1415 - 4th Ave.
Lowman & Hanford Co., 1514 - 3rd Ave.
Spokane: John W. Graham & Co., Dept. C, 707 Sprague Ave.
Joyner Drug Co., Howard & Riverside Ave.
Tacoma: Eastman Kodak Stores, Inc., 910 Broadway.
Walla Walla: Book Nook Drug & Stationery Store.

WEST VIRGINIA

Wheeling: Twelfth St. Garage, 81 - 12th St.

WISCONSIN

Fond du Lac: Huber Bros., 36 S. Main St.
La Crosse: Moen Photo Service, 313 Main St.
Madison: Photoart House, 212 State St.
Milwaukee: Eastman Kodak Stores, Inc., 737 N. Milwaukee St.
Boston Store, Wisconsin Ave. & 4th St.
W. E. Brown, 327 W. National Ave.
Gimbel Bros., E. Wisconsin & N. Plankington.
Roa Meuer, The, 226 West Wells St.
Phillips: Jakoubek's', 132 N. Lake Ave.
Racine: Photo-Crafts Shop, 526 College Ave.

AUSTRALIA

Melbourne: McGills Agency, 179-218 Elizabeth St.

CHINA

Canton: International Book Co., 269 North Wing Hon Road.

ENGLAND

London: J. H. Dallmeyer, Ltd., 31 Mortimer St. and Oxford St. W. I.

HAWAII

Honolulu: Eastman Kodak Stores, 1059 Fort St.

INDIA

Bombay: Continental Photo Stores, 255 Hornby Road.
P. C. Eranee Sons, Albert Bldgs., Hornby Road.
Calcutta: Photographic Stores & Agency Co., 154 Dhuramtolla St.
M. L. Shaw, 5/1 Dhuramtolla St.
Lucknow: Lucknow Commercial Co., 25 Aminabad Park.

MEXICO

American Photo Supply Co. S.A., Av. F.1, Madero, 43, Mexico, D.F.

POLAND

Warsaw: Polska Agencia Prasy Filmowej Wspolna 35.

SOUTH AMERICA

Buenos Aires: Argentine Rep., Casa America Ltda. S. A. Avenda de Mavo 959.

Classified Advertising

Rates: Four cents a word. Minimum charge, one dollar per insertion.

FOR RENT—MISCELLANEOUS

FOR RENT—Mitchell Motor, 25 M.M. Lenses, 1000 feet Mitchell Magazines, Baby Tripod. J. R. Lockwood, Glendale. Phone Douglas 3361-W.

FOR RENT—Mitchell high speed gear box complete. Pliny Horne, 1318 N. Stanley. HO-7682 or HO-9431.

FOR SALE OR RENT

FOR SALE OR RENT—Mitchell and Bell & Howell silenced cameras, follow focus Pan lenses, free head, corrected new aperture. Akeley, DeBrie, Pathe, Universal, Prevost, Willart, DeVry, Eyemo, Sept, Leica. Motors, Printers, lighting equipment. Bell & Howell Cameras with old type shuttles, silenced, $150.00. Also every variety of 16mm and still cameras and projectors. Everything photographic bought, sold, rented and repaired. Send for our bargain catalogue. Hollywood Camera Exchange, 1600 Cahuenga Blvd. Phone: HO-3651; Cable address Hocamex.

FOR SALE—Here's an excellent 16mm Movie Outfit including Camera and Projector for $29.50. "EASY TERMS." Literature free. D. F. Elder & Co., Dept. Y-1, Chelsea, Mass.

FOR SALE—DeVry 35mm Carl Zeiss 2-inch f:2.7, $50.00. Eyemo 16 Speed, $80.00. 1805¼ N. Highland Ave., Hollywood, Calif. HI-6798.

FOR RENT—CAMERAS

FOR RENT—Thoroughly silenced Mitchell cameras, Pan Astro lenses, follow focus. J. R. Lockwood, Glendale. Douglas 3361-W.

FOR RENT—Mitchell high speed camera with latest 40, 50 and 75 mm. Pan-Astro lenses. 1000 ft. magazines; loose head, tripod. Pliny Horne, 1318 N. Stanley. HO-7682 or HO-9431.

FOR SALE—CAMERAS

FOR SALE—Bell & Howell adapter for Mitchell Tripod head, 40-50-75-M.M. Astro lenses mounted and unmounted, Mitchell tripod head, Mitchell matte box. J. R. Lockwood, 523 N. Orange St., Glendale, Calif. Douglas 3361-W.

FOR SALE—35 MM. Pathe Studio Camera, 1 f:3.5 Krauss Tessar; carrying case; three magazines, $100. Universal Tripod with carrying-case, $75. Box S, American Cinematographer, 1222 Guaranty Bldg., Hollywood.

FOR SALE—CAMERAS

AKELEY CAMERA—Practically new, rebuilt for color; 40mm. and 50mm. lenses; 10 magazines; cases; tripod, etc. Cost $5,000—will sell for $1,250. Box R.W.S. care American Cinematographer.

FOR SALE—MISCELLANEOUS

FOR SALE—Ica "Monopol" semi-portable 35 MM. projector, complete with carrying-cases and extra carbons. Box S, care American Cinematographer.

FOR SALE—Special complete 16 mm. editor with geared rewinds, magnifier and splicer, $4.50 plus postage. Money refunded if not satisfactory. FOTOSHOP, 136 West 32nd St., New York City.

FOR SALE—Latest Bell & Howell 5-way Sound Printer. Also Bell & Howell Splicer; cheap for cash. XH c-o American Cinematographer, 6331 Hollywood Blvd., Hollywood, Calif.

WANTED

WANTED—Cameras. Will trade—26 lots valued at $300 each; also 4 room house valued at $1800; 5 room house valued at $5300; one temporary house valued at $1500; all located in East Detroit, Michigan, adjoining golf club. Will trade all or part for Professional Mitchell, Bell & Howell or other photographic equipment. Steve E. Szabo, 5000 Fourth Ave., Los Angeles, Calif.

WANTED—DeVry 35mm. Hand-camera, double-claw movement. Must be cheap and in good condition. Box G, care American Cinematographer.

WANTED—Motor adapter. J. R. Lockwood, Glendale. Douglas 3361-W.

WANTED—Mitchell High Speed Silent Camera, box only, without equipment. Must be cheap for cash. Box 140, American Cinematographer.

WANTED—"Leica" enlarger; must be in good condition and cheap. Box H.R., care American Cinematographer.

WANTED—Leica Camera and model good condition. Cheap. Box C, c-o American Cinematographer, 6331 Hollywood Blvd., Hollywood, Calif.

WANTED—Bell & Howell Cameras. Write, giving serial number, lenses, accessories, etc., and lowest cash price. Address Box No. 215, c-o American Cinematographer, 6331 Hollywood Blvd., Hollywood, Calif.

You want The Cinematographic Annual ●

and take-up sprocket operated by a buckled section of film coming from said feed and take-up sprocket for disengaging said clutch mechanism.

1,928,579. Method of Superimposing a Foreground or Image Upon a Background in Photography. Walter D. Walker, Chicago, Ill., assignor, by direct and mesne assignments, to Cinema Development Company, Chicago, Ill. The method of superimposing an image upon a background which comprises preparing the rear surface of the image area to render it impervious to but reflective of light, then placing the background and image together in coacting relation and regulating the flow of light on both from different sources to obtain the proper illumination of each, and then photographing the same to provide a picture thereof.

A Manual for the Amateur Producer

● "Film-play Production for Amateurs," recently published by Isaac Pitman and Sons (New York and London), is one of the most notable contributions to the rapidly growing literature of the amateur cinema. The author, George H. Sewell, treats many phases of amateur photoplay production from the practical viewpoint of one who has actually done it (as an amateur) himself. He quite wisely stresses the fact that the production of a photoplay must of necessity be a collective, rather than an individual undertaking, and he writes, accordingly, of the organization of such a group, the duties of the different members, the distribution of the expenses, and so on, as well as of the more obvious artistic and technical problems involved. He describes in great detail the physical operation of a true amateur studio, the construction of inexpensive, professional-type sets, and a number of very useful accessories, such as "niggers," "goboes," diffusing-screens, matte-boxes, jack-boxes, cutting-tables, etc., which are rarely encountered away from professional studios, but which are nevertheless of great practical value to the amateur.

The volume's chief weakness lies in the fact that its author is clearly more experienced in direction and production-management than in cinematography. However, since the book is a treatise on production rather than on photography, this is only a minor fault; especially as it is very nearly the only real guide yet published for the amateur producer—and by long odds the most practical and authoritative.